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JANUARY, 1915

NUMBER 7

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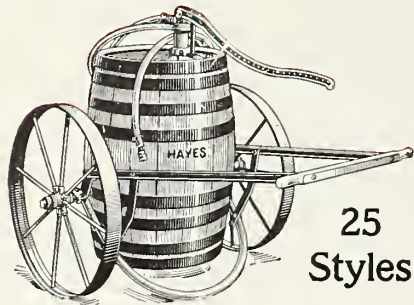
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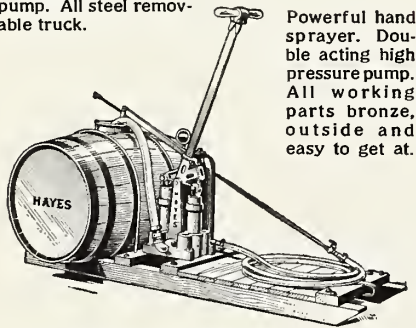
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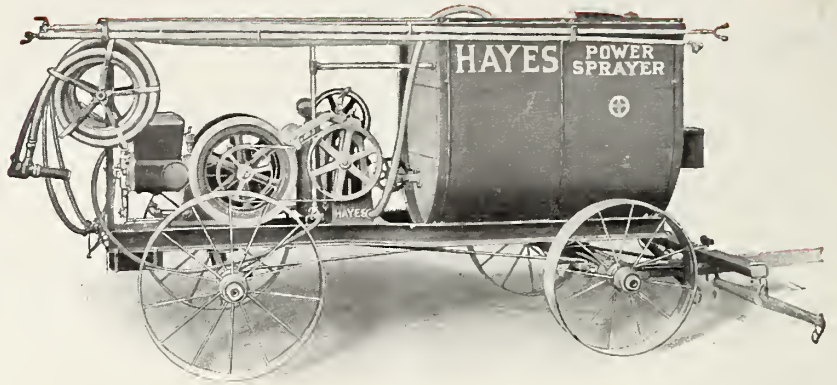


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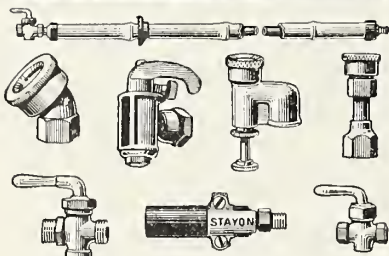
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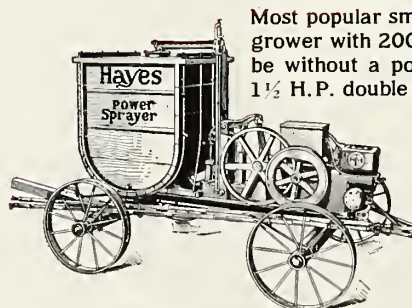
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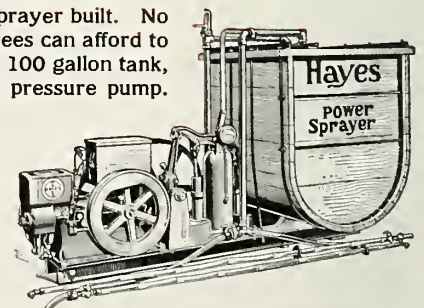
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BETTER FRUIT

AN ILLUSTRATED MAGAZINE PUBLISHED MONTHLY IN THE INTEREST OF MODERN, PROGRESSIVE FRUIT GROWING AND MARKETING

Insecticides and Fungicides for Insect and Fungus Troubles

By S. W. Foster, Entomologist, General Chemical Company of California, San Francisco

THE most economical spray that can be applied to fruit trees is the spray, or combination of sprays, that will do the most good toward mitigating, controlling or preventing the greatest percentage of pests, and give the tree, fruit and foliage protection over the longest time. The biggest mistake, often made by fruitgrowers when the time comes to spray, is to figure the cost of the materials in the tank without more than a passing thought for the balance sheet at the end of the season, or the final effects on the tree. It often happens that a tank full of spray costing the grower less than one cent per gallon is expensive, when a different combination costing two or three cents per gallon would be far more economical. Knowing that two different kinds of material have equal value, we should of course use the less expensive. But for the best success we must know that they are equal or else take the best preparation.

In lime-sulphur solution, the amount of sulphur in solution is the important factor, provided the finished product is a clear liquid free from sediment. With oil sprays, the amount and grade of oils used (this refers to mineral, animal and vegetable oils) as well as the manner of emulsifying and the penetration must be taken into consideration. With arsenate of lead the amount of arsenic oxide in proper combination with lead oxide, together with ease of handling or mixing with water, the adhesive qualities and a low water soluble-arsenic content are important. In bordeaux mixture the amount of quickly available copper is the valuable element, provided the mass is finely divided to facilitate spreading and adhesiveness.

Fruitgrowers should become more familiar with the troubles to be treated—should watch the troubles more closely—study the nature and habits of the insect or fungus and know the time and under what conditions it is most susceptible to treatment with the greatest good and least harm to the tree. Most of the scale insects on deciduous trees are best controlled by spraying during the dormant season. Late winter and early spring is preferable, provided the work can be done when the trees are dry and the temperature is above freezing point. This treatment, if properly timed, is effective against eggs of green aphid and will control leaf-blister mite. Fungus scab, mildew, codling moth, leaf hoppers, red spiders, etc., must be looked after during the growing period.

Just as the most economical spray is the one that gives the best results, so it is that the most economical spray machine is the one that will do the best work, deliver a large volume of spray under high pressure, easy to operate, and one that will keep on going. Time is an important factor in spray operations, and the delays caused by breakdowns or failure to do the proper work quickly are often more costly than the price of a new and good outfit. Too

gallons of spray. A preparation containing less sulphur in solution, regardless of name or brand, should be used relatively stronger. One containing 20 per cent sulphur in solution should be used at the rate of 14½ gallons for 100 gallons of spray. So far as known at this time nothing can be added to lime-sulphur solution to economically increase its efficiency against scale insects in winter. If it is a clear liquid, free from sediment, with all the sulphur and lime in actual solution and used at sufficient concentration, under favorable weather conditions, it will do the work. However, when used in early spring when purple aphid is present the addition of nicotine will be of benefit.

Oil Sprays.—Various oil emulsions, miscible oils and soluble oils have received considerable attention during recent years. For use during the winter, crude-oil emulsion is the more desirable for all scale insects, although good results can be obtained with some of the miscible oils and distillate emulsions when used in the late winter or very early spring. The prepared products now on the market differ in composition so that it is not feasible to give definite directions for proper dilutions. The recommendations of the manufacturers are usually correct, although it may be necessary to vary this sometimes to meet special cases. When crude-oil emulsion is made by the grower from crude oil or fuel oil purchased on the market it should be used at rate of 12 gallons of oil, with sufficient soap for emulsifying, to each 100 gallons of spray. Crude-oil emulsion is particularly valuable for the control of the large *Lecanium Schlaes* (such as the European fruit scale, hemispherical scale, etc.), the scurfy scale, oyster-shell scale for moss and lichens and for heavy encrustations of San Jose scale where lime-sulphur solution does not give sufficient penetration.

For San Jose scale and blister mite on apples and pears, spray in the early spring, as the cluster buds begin to swell, but before opening, using lime-sulphur solution at the rate of 12 gallons to each 100 gallons of dilute spray. In addition to controlling San Jose scale, this will also aid in controlling the early infections of scab, and will very largely control the green aphid and purple aphid of apple trees. To make this treatment more efficacious against heavy infestations of purple aphid, Black Leaf "40" may be added at the rate of 1 pint to 200 gallons of dilute lime-sulphur solution. It is uni-

Features of this Issue

INSECTICIDES AND FUNGICIDES
FOR INSECT AND FUNGUS
TROUBLES

SEVENTH NATIONAL APPLE SHOW
AND FRUIT PRODUCTS
CONGRESS

PROPER AND THOROUGH
SPRAYING

CROWN GALL

COMMERCIAL WALNUT GROWING
IN THE UNITED STATES

THE SAN JOSE SCALE INSECT
APPLE SCAB

much emphasis cannot be put on thoroughness of the work. In spraying for scale insects every particle of the tree, from the ground to the tip of the longest twigs, must be covered on all sides. For scab and mildew, all the fruit, fruit clusters, foliage, twigs and limbs must be thoroughly covered. At the first spraying for codling moth every calyx cup should be filled with poison, and at later sprayings the surface of every apple covered with a thin film of spray. To effectively control red spider, mites and leaf hoppers, cover all foliage on both sides.

Lime-sulphur solution is the generally accepted and most widely-used treatment for San Jose scale. When this species alone is to be considered in moderate numbers, or when leaf-blister mites and green-aphid eggs are present, it is probably the best-known remedy. It possesses the added value of a fungicide, when used in late winter, that does much good in checking early developments of scab. For success in controlling scale insects, however, it must be used at sufficient concentration to do the work. As a rule, lime-sulphur solution containing 25 per cent sulphur in solution should be used at the rate of 12 gallons for each 100



George Washington's Birthplace, made of apples, entered by Miss Fanny Break, Spokane, at the Seventh National Apple Show, Spokane. This won first prize of \$150 for the best original feature entered by an individual.

versally good practice to spray apple orchards once a year with lime-sulphur solution when the early fruit buds begin swelling in early spring. It will certainly be a big help to prevent accumulation of many troubles, in addition to controlling specific troubles mentioned above.

For oyster-shell scale, scurfy scale, Italian pear scale and the large Lecanium scales, and for accumulations of moss and lichens on the trunk and limbs, spray the trees as late in the spring as possible, without danger of injuring the young growth and fruit buds, with crude-oil emulsion at the rate of 10 to 12 gallons to each 100 gallons of dilute spray. In cases of severe infestations of oyster-shell scale, this first application may not be sufficient and a second spraying with distillate-oil emulsion, about 2 per cent concentration, combined with atomic sulphur for scab and mildew and arsenate of lead for codling moth, will be a decided aid. The crude-oil treatment is very efficacious on trees covered with moss and lichens, under which some of the smaller scale insects often hibernate.

During the growing period, it is often necessary to spray for many different troubles at or near the same time. When the right materials are used it is often possible to put several into the spray tank at the same time and make an effective fungicide and insecticide treatment at the same application. Many such combinations have been in use for some time, but even at this time the failure to use the right materials, or to mix them in the right proportion, causes considerable loss. In the Pacific Northwest the principal troubles to be controlled on apple trees during the growing period are scab, mildew, codling moth, aphid, red spider and leaf hoppers. The codling moth is a well-

known pest in all apple-growing regions and will not be discussed in detail at this time. Leaf hoppers and red spiders occur in more or less limited areas of the Northwest, and both are easily discernible when present in injurious numbers. The rosy-apple aphid (or brown aphid) feeds in the developing fruit clusters, blossoms and on the young fruit, stunting the growth and causing it to be deformed. The green-apple aphid feeds on the foliage and the young twig growth, curling the leaves and generally stunting the growth. With powdery mildew, the fungus attacks the foliage and current year's twig growth. In some cases blossom clusters and young fruit are attacked and the growth stunted, causing the blossoms to be short stemmed and the stems thickened, the fruit reduced in size, and in some cases checked and marked by the growing mycelium of the fungus. Mildew produces white or grayish areas on the foliage and young twig growth, preventing the normal development of the foliage and checking the twig growth which reduces the vitality of the tree.

Bordeaux mixture and lime-sulphur solution are not to be relied on for the control of mildew, according to Ballard and Volek (United States Department of Agriculture, Bulletin No. 120). Solutions of copper or sulphur in the form of sulphides, where the sulphur is in actual solution, are not effective nor advisable for mildew control. Precipitated sulphur, colloidal sulphur or other forms of very finely divided sulphur in condition suitable for liquid spraying give far better results. Among these are the iron-sulphide mixture and atomic sulphur, a commercial preparation in paste form ready for dilution in spray tank. This form of sulphur, in addition to its direct effect on the

fungus, gives considerable stimulation to the foliage and strong, vigorous foliage is an important step toward mildew control. Under these conditions it is of special importance that the first application be made early in the season, preferably at the time of the first spraying for codling moth. Atomic sulphur and arsenate of lead may be used at the same time. In fact if atomic sulphur, 6 to 8 pounds to 100 gallons of water, is combined with arsenate of lead for the first two sprayings for codling moth it will usually give satisfactory control. In some sections where mildew grows very rapidly it may be necessary to make an additional spraying with atomic sulphur between the first and second spraying for codling moth.

Apple scab is causing more injury in the Northwest each year and fruitgrowers must give closer attention to time of application and thoroughness of work. The first spraying, to be successful, must be put on before the early infections take place in the bud clusters. This should, as a rule, be done as soon as the clusters begin spreading. The term "pink spray" is often loosely translated to suit the convenience of someone or to fit in with some other work. To be safe, put this first spray on, and do it thoroughly, when the earliest buds begin to show pink and do not wait until blossoms are appearing, when many infections of scab may have taken place. It is of special importance to get this "pink spray" on early when the late-winter spray of lime-sulphur solution has not been used.

Obviously the least number of applications that will control all these troubles and with the least amount of resulting injury is desirable. As young apples are very easily russeted and injured by the use of some of the well-known fungicides, especially in combination with arsenical sprays, it has been necessary to proceed with considerable caution in advocating too many combinations. Also, the advent of light-distillate emulsions and similar oil sprays as safe, effective treatments for aphid and similar troubles, gives another angle to the possibility of combinations—also impossibilities. Neither lime sulphur nor bordeaux mixture should be used with oil sprays. However, recent investigations indicate that at least one form of nicotine can be safely combined with bordeaux mixture. Nicotine is, of course, a safe and effective combination with lime sulphur.

Without burdening you with further details, and assuming that the winter or dormant spraying has been properly applied, the following schedule is suggested, and it is done advisedly with the best knowledge to be obtained from latest investigations. As soon as cluster buds have spread open, but before blooming, it is time to spray for scab, and where scab is the only fungus trouble either lime-sulphur solution (3 gallons to 100) or bordeaux mixture (6 to 8 pounds of commercial paste to 50 gallons, or 5-5-50 formula if made at

home, should be used). When aphid is also present and has not been killed by previous sprayings, add Black Leaf "40" (at rate of 1 pint to 200 gallons dilute lime sulphur or bordeaux mixture). When aphid infestations are heavy, or when woolly aphid is present, and where a more penetrating preparation is desired, it is advisable to make an extra application with distillate-oil emulsion (3 per cent) plus Black Leaf "40" (1 pint to 200 gallons). Where mildew is prevalent along with aphid infestation, atomic sulphur, distillate-oil emulsion and Black Leaf "40" may be used together for this "pink" spray.

As soon as most of the petals have fallen from the tree it is time to spray for codling moth and any leaf-eating caterpillars that may be present, and the important spraying for mildew, also time for the second spraying for scab and for any green aphid that have not been killed by previous treatments. Use arsenate of lead paste, 4 to 5 pounds, or arsenate of lead powder, 2 to 2½ pounds to 100 gallons of water, for codling moth and chewing insects, adding atomic sulphur at the rate of 12 pounds to each 100 gallons of water for scab and mildew. If green aphid, woolly aphid or thrips are present add Black Leaf "40" at the rate of 1 pint to 200 gallons. All spraying must be done under high pressure and every calyx cup should be filled. Use a tower platform on the spray machine to enable one man to spray from above and cover all portions of the trees and fruit buds not thoroughly sprayed from the ground.

If this spraying is thoroughly done, the second application should be applied from three to four weeks after the petals fall from the trees, using



Exhibit of the Spokane Valley at the Seventh National Apple Show, held in Spokane November 16 to 21, 1914. This display won first prize of \$100 among the displays for irrigated districts

arsenate of lead paste, 4 to 5 pounds, or arsenate of lead powder, 2 to 2½ pounds to 100 gallons of water, for codling moth, with atomic sulphur, 10 pounds to each 100 gallons of water, for scab and mildew. In addition to its value as a fungicide, atomic sulphur will effectually control any red spiders or mites that may be present at this time. All of the aphid, both the green aphid and purple aphid, should have been killed prior to this time. How-

ever, if woolly aphid is present, Black Leaf "40" should be added to the dilute arsenate of lead and atomic sulphur.

The third spraying for codling moth should be applied about ten weeks after the petals fall. This may be definitely known for each section by collecting a large number of first-brood worms and allowing them to pupate among rags or paper in a cage suspended in a tree, or kept in the shade on the ground. Spray when the first moths emerge in the cage, as the young worms will begin entering the fruit within a week or ten days after the moths begin flying. If scab, mildew, red spider or mites are present, use atomic sulphur at the rate of 10 pounds to each 100 gallons of water, adding arsenate of lead as usual for codling moth.

The treatment outlined above, if properly applied, will effectively control codling moth, fungus scab, mildew, red spiders and green aphid. Where atomic sulphur is used at each application it will greatly reduce the infection of leaf hoppers when such are present. Where scab and red spiders are not present and atomic sulphur is used only for mildew, 6 to 8 pounds to 100 gallons of water will be sufficient concentration. However, for scab use at least 12 pounds to each 100 gallons. In sections where late infestations of codling moth cause injury a fourth application of arsenate of lead may be advisable.



Judges at work in the Women's Department of the Seventh National Apple Show, in which more than 2,000 entries were exhibited. From left to right the judges here shown are: Mrs. W. G. Hall, Spokane; Miss Sue Lombard, North Yakima; Mrs. S. C. Scantlebury, Spokane; Mrs. Elizabeth Lamb, Spokane, and Mrs. D. L. Brett, Wenatchee.

F. A. BISHOP, Secretary
HOOD RIVER ABSTRACT COMPANY
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Seventh National Apple Show and Fruit Products Congress

By Robert S. Phillips, Spokane, Washington

THE Seventh National Apple Show and Fruit Products Congress, held at Spokane in November, was epoch-making because it brought about the first concrete and organized effort to utilize the surplus fruits and vegetables of the Pacific Northwest by the manufacture of by-products. Two years ago the Spokane Apple Show provided the medium for the co-operative organization of growers under the standard of the North Pacific Fruit Distributors. Some will argue that 1914 ushered in a movement of even greater importance than the co-operative marketing of fresh fruits. At all events, all agree that both subjects are of great moment, and the important thing is that a start was made toward converting an astonishingly large item of loss to the profit side of the ledger when the men assembled at the apple show decided to get busy at once to find a solution of the problem. Out of the mass of discussion on the memorable Thursday, November 19, there emerges the fact that the following ten men were appointed to form a central by-products organization: H. M. Sloan, Bitter Root, Montana; P. A. Weyrauch, Walla Walla; G. C. Corbaley, Spokane; Conrad Rose, Wenatchee; Alexander Miller, North Yakima; W. H. Paulhamus, Puyallup; Truman Butler, Hood River; D. A. Snyder, Dayton, Oregon; J. H. Holt, Eugene, Oregon; M. J. Higley, Payette, Idaho.

The appointment of the "Big Ten" was the sequel to the adoption by the conferees of the following resolution: "Resolved, that we recommend to the by-products convention that a board of ten be appointed, representing the different fruit producing districts of the Northwest, with power to act in the formation of a by-products organization along the general lines recommended by the by-products committee, including such effort as they may find practical to bring the present fresh fruit selling agencies into more harmonious action, and to take such additional action as the board may deem wise. Resolved, that as soon as possible the permanent representative of each district be referred to the growers and by-products institutions of each district in such a manner as the board shall desire. Resolved, that the new board be selected by a committee consisting of H. C. Sampson, W. H. Paulhamus and F. E. Sickels."

This action was not taken on snap judgment or without full knowledge of present conditions and future contingencies. The conference already had received a comprehensive report from H. C. Sampson of Spokane, former secretary of the North Pacific Fruit Distributors—a report based on a year's survey of Northwestern orchards and farms by a committee of which Mr. Sampson was chairman. Some of the things this committee found are worthy of mention. For instance, Mr. Sampson reported a total fruit acreage in the

Northwest of 605,000 acres, which would produce ultimately 150,000 cars of fruit, of which the railroads could furnish 30,000 cars and 20,000 cars could be stored in the Northwest, leaving a total of 100,000 cars to be cared for in by-products plants. In 1914, according to the report, of 12,000 cars of apples in the Northwest, 5,050 cars were combined "C" grade and five-tier fruit not large enough or good enough to be wisely salable.

"Growers must adjust their ideas away from the basis of the high prices of a few years ago to a basis of modest profit on carefully tended, economically managed orchards," said Mr. Sampson. "The vital factor is the conservation of high grade fruit and the assurance of a reasonable price for green fruit. Montana does not have a single cannery or evaporator within her territory. Nevertheless during 1913 Montana imported 60,000 cases of canned fruit, 70 per cent of which was peaches and pears. She imported 40 cars of apple cider vinegar and 20 cars of sweet cider. She imported 125,000 cases of tomatoes, 75,000 corn, 60,000 peas and 25,000 beans, or a total of 285,000 cases of canned vegetables. No figures are obtainable as to her importations of dried and evaporated fruits and vegetables. Idaho in 1913 shipped out 175 tons of dried apples, 50 of dried prunes, 75 of other dried fruits, 25 of canned berries, 100 of canned peaches, 25 of canned rhubarb and 50 of beans, but during that same year the same state imported 185 tons of dried apples, 75 of dried prunes, 150 of dried peaches, 100 of other dried fruits, and 950 of canned fruits and vegetables. Her imports were a total of 96 tons greater than her total exports.

Our present needs in the four states, as shown by excess of imports over exports, the natural heavy increase of by-products consumption, as shown by the report of the committee, and the success of the State of California, all indicate a large output possible from the Northwest at fair prices for our own manufactured products. Through the co-operation of our own railroads, wholesalers, retailers and buying-at-home leagues; by the stimulation of lumber camp trade, and with our present home and Alaskan needs, surely we can increase our consumption materially in our own home territory. The committee finds a number of surprising things. Much fruit goes to waste in many Northwestern towns and cities, and the same variety of fruit, canned or evaporated in California, is found on the merchants' shelves in these same villages. Annually California imports great quantities of Royal Ann cherries for maraschinos, imports hundreds of tons of Oregon pears, and exports back to this country and the Canadian territory this same fruit. Some districts let hundreds of tons of apples go to waste and import every pint of vinegar they use. Corn canned in the West is shipped to the East and returned under Eastern labels. Vinegar of the West is shipped in barrels to the East, put into cases, returned to the Northwest and sold at four times the price it was bought for. And all these products are from our own home states but bear a foreign label, thus losing to us the advertising value. California supplies the dried and canned fruit largely for our own states and the territory north of us. She uses thousands of tons of peach seeds, the kernels being processed and



Minnehaha, the unique exhibit of Mrs. Edith A. Proudft, Fairfield, Washington, winning second prize of \$100 among original features entered by individuals at the Seventh National Apple Show



The striking exhibit of the North Pacific Fruit Distributors at the Seventh National Apple Show, Spokane. This won first prize of \$100 for the most original feature entered by firms, corporations, etc., for advertising purposes.

sold as 'bitter almonds' or shipped to Germany and there used for the manufacture of prussic acid. The committee is unanimous in its conclusion that a central by-products organization is necessary for the salvation of our fruit and vegetable industry. Therefore the committee unanimously agreed to call this convention today for the purpose of forming a central by-products organization whose functions, the committee recommends, shall be: First, to act in an advisory capacity to all districts contemplating establishing plants and to employ experts whose services are to be paid for by such districts. Second, to arrange for a central selling agency for the handling of by-products."

It is doubtful if any other event ever held in the Pacific Northwest accomplished so much in the way of educating the people about the varied uses of the apple as did the women's department of the Seventh National Apple Show. Thousands of people witnessed the cooking demonstrations and heard the lectures given each morning, afternoon and evening by the instructors and students of Washington State College and University of Idaho and by experts employed by the Oregon-Washington Railroad & Navigation Company and the Washington Water Power Company. The college demonstrations took place in the women's auditorium, which had seating facilities for 600 persons, and the Oregon-Washington Railroad & Navigation Company and Washington Water Power Company had large booths of their own, equipped with electric ranges. Every demonstration attracted its crowd, and the men showed almost as much interest as the women in watching the experts as they prepared the apple in scores of different ways. The women's department, in which nearly \$1,000 in prizes were distributed, brought out approximately 2,000 entries of pies, dumplings, jellies, jams and a hundred and one other apple preparations prepared by housewives. Arranged in racks and accompanied by the recipes followed in the making, these entries

made a very imposing and attractive spectacle.

The busiest persons at the show were the judges who had the task of selecting the winners in this division of the show. Given six days in which to determine the respective merits of 2,000 different apple preparations, they completed their work at 5 o'clock on the afternoon of the sixth day. Each judge probably broke a world's record when she tasted 2,000 different dishes in that length of time. The women who did this were: Miss Sue M. Lombard, North Yakima; Mrs. D. L. Pratt, Wenatchee; Mrs. W. A. Ritz, Walla Walla; Mrs. S. C. Scantlebury, Spokane; Mrs. W. G. Hall, Spokane; Mrs. Elizabeth B. Lamb, Spokane.

But it must not be supposed that the apple in its native state was not at the show. Some hundreds of thousands of the world's finest adorned the big racks. After a casual glance at the apple entries, the judges—A. P. Bateham of Portland, Charles L. Hamilton of North Yakima and W. S. Thornber of Lewiston—ventured the opinion that

they would complete their work in three or four days. When they got into the work, however, they found the quality of the apples so uniformly high and the contests so close that they had to extend themselves to finish after six days of exceedingly hard work.

Attendance considered, this year's apple show was the most successful in history. About 60,000 people paid their way to the spacious grounds within two blocks of the business heart of Spokane. The show itself was well arranged and set a new mark for beauty of arrangement and excellence of feature exhibits. The industrial department included a number of "live" exhibits or demonstrations of orchard appliances, which were operated on the grounds for the practical education of the growers. By way of entertainment the show was unusually attractive. Each afternoon and evening Chiaffarelli's Italian Band, a high class organization, gave concerts, and the Mendelssohn Male Chorus of sixty voices sang every evening. Two mornings were required for the completion of the world's championship apple packing contest, which was won by M. R. Emerson of Opportunity, with C. L. Poynter of Otis Orchards second and Ed. Remy, Jr., of North Yakima third. First, second and third prizes in this contest were \$50, \$25 and \$20, respectively.

Prizes and the Winners

TWENTY-FIVE BOX LOTS

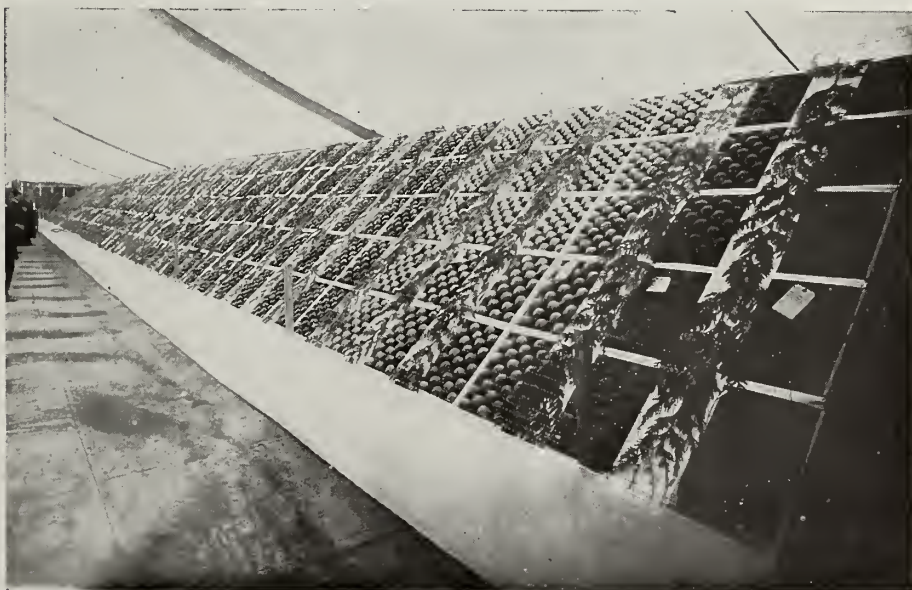
First prize, \$100; second prize, \$50.

Jonathan—First, J. M. Maloney, Hunters, Wash.; second, J. B. Feltz, Spokane.
Rome Beauty—First, F. E. Williams, Opportunity; second, G. S. Feltz, Spokane.
Wagener—First, W. J. Enright, Chester; second, C. M. Lockwood, Opportunity.
Winter Banana—First, Tredinnock Farms, Mica.

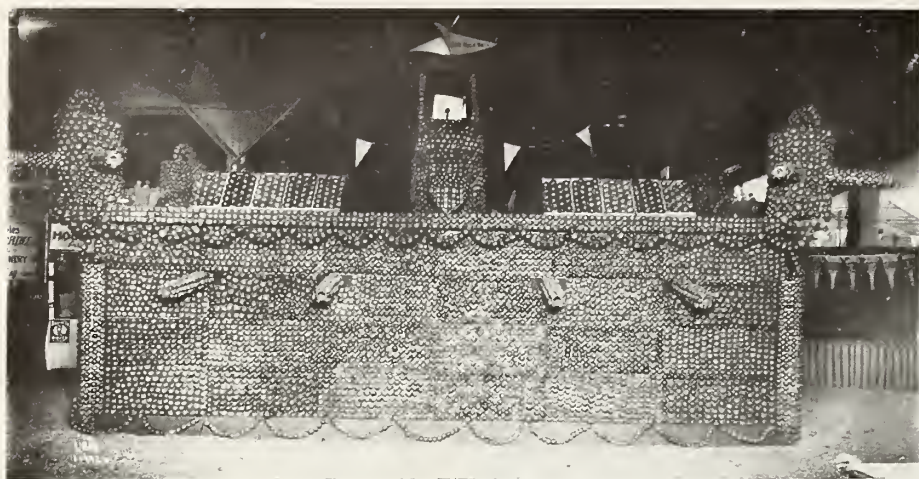
SPECIAL AWARDS, 10-BOX CLASS

Northwestern Fruit Exchange Special—Sweepstakes on pack, Fred Benson, North Yakima. Special prize of \$10 gold watch fob.
Mitchell, Lewis & Staver Special—Sweepstakes in 10-box class, J. B. Schon, Wenatchee. Special prize of \$40 spray pump.

Lamb-Davis Lumber Company Special—For best 10 boxes of Delicious grown in Chelan or Douglas Counties, Wellington Deitch, Wenatchee. Special prize of 500 apple boxes.



General view of one of the big racks at the Seventh National Apple Show, Spokane, 1914



The Big Apple Fort of the Walla Walla Commercial Club, which won first prize of \$150 for the best feature display entered by organizations at the Seventh National Apple Show, Spokane, 1911

Cascade Lumber Company Special—Grower from Yakima, Kittitas or Benton Counties who scores highest in 10-box class, Fred Benson, North Yakima. Special prize of 500 apple boxes.

SINGLE BOX CONTESTS

First prize, \$7.50; second, \$5; third, \$3; fourth, \$2.

Arkansas Black—First, C. M. Holtzman, Zillah, Wash.; second, Henry Van Marter, Opportunity, Wash.; third, S. M. Engel, North Yakima, Wash.; fourth, Frank Enquist, Selah, Wash.

Baldwin—First, Turner Brattain, Otis Orchards, Wash.; second, James Rooke, Grand Forks, B. C.; third, J. D. Godwin, Shorts Point, B. C.; fourth, R. M. Garvin, Meyers Falls, Wash.

Black Ben Davis—First, F. L. Pugh, Peach, Wash.; second, Sherman Gatten, Mead, Wash.; third, E. A. Schon, Vernon, B. C.; fourth, R. A. Jones, Spokane.

Delicious—First, J. D. Godwin, Shorts Point, B. C.; second, Wellington Deitch, Wenatchee, Wash.; third, Ernest Foster, Wenatchee, Wash.; fourth, R. A. Jones, Spokane.

Grimes Golden—First, John Bengel, Spokane; second, W. J. Enright, Chester, Wash.; third, Henry Van Marter, Opportunity, Wash.; fourth, W. T. Robbins, Mead, Wash.

Jonathan—First, Henry Van Marter, Opportunity, Wash.; second, J. C. Dun-Waters, Fintry, B. C.; third, C. M. Lockwood, Opportunity, Wash.; fourth, J. Hurdstrum, Peach, Wash.

King David—R. T. Smith, Greenacres, Wash.; second, J. M. Jackson, Opportunity, Wash.; third, R. A. Jones, Spokane.

McIntosh Red—First, S. M. Young, Summerland, B. C.; second, James Rooke, Grand Forks, B. C.

Northern Spy—First, George Craig, Summerland, B. C.; second, H. C. Mellar, Summerland, B. C.; third, James Rooke, Grand Forks, B. C.; fourth, R. A. Jones, Spokane.

Rhode Island Greening—First, James Rooke, Grand Forks, B. C.; second, C. M. Lockwood, Opportunity, Wash.; third, W. T. Robbins, Mead, Wash.; fourth, R. A. Jones, Spokane.

Rome Beauty—First, J. B. Schon, Wenatchee, Wash.; second, Egbert Trask, Oyama, B. C.; third, Fred Jewell, Mabton, Wash.; fourth, P. J. O'Brien, Boundary, Wash.

Spitzenberg—First, Fred A. Benson, North Yakima, Wash.; second, V. Carr, North Yakima, Wash.; third, J. D. Godwin, Shorts Point, B. C.; fourth, Tuttle & Son, Opportunity, Wash.

Stayman Winesap—First, W. S. Hess, North Yakima, Wash.; second, Fred A. Benson, North Yakima, Wash.; third, J. Lawyer, Summerland, B. C.; fourth, A. A. Schmidt, North Yakima, Wash.

Tompkins King—First, R. A. Jones, Spokane; second, W. W. Rodwell, Hood River, Oregon; third, H. Logan, Peachland, B. C.

Wagener—First, W. J. Enright, Chester, Wash.; second, J. Wirtner, Mica, Wash.; third, Hans Peterson, Mead, Wash.; fourth, P. J. O'Brien, Boundary, Wash.

Winesap—First, J. B. Schon, Wenatchee, Wash.; second, H. S. Budgett, North Yakima, Wash.; third, Stanley Ranch, Entiat, Wash.

Winter Banana—First, W. S. Kelsey, Opportunity, Wash.; second, Tuttle & Son, Opportunity, Wash.; third, Joseph Burrows, Vernon, B. C.; fourth, J. B. Felts, Spokane.

Yellow Newtown—First, S. M. Young, Summerland, B. C.; second, H. C. Mellar, Summerland, B. C.; third, Mrs. W. W. Bodwell, Hood

River, Oregon; fourth, C. M. Lockwood, Opportunity, Wash.

White Winter Permain—First, Stanley Ranch, Entiat, Wash.

FIVE-BOX LOTS

First prize, \$25; second, \$12.50; third, \$10. Arkansas Black—First, F. A. Brown, North Yakima; second, R. H. Woods, Payette, Idaho; third, F. B. Supleo, Payette.

Baldwin—First, H. S. Monro, Summerland, B. C.; second, R. M. Garvin, Meyers Falls, Wash.; third, R. A. Jones, Spokane.

Black Ben Davis—First, R. A. Jones, Spokane; second, F. B. Supleo, Payette, Idaho; third, F. L. Pugh, Peach, Wash.

Ben Davis—First, W. D. Connor, North Yakima; second, Hans Peterson, Mead, Wash.; third, W. A. Monroe, Sunset Prairie, Spokane.

Delicious—First, J. D. Godwin, Shorts Point, B. C.; second, J. C. Dun-Waters, Fintry, B. C.; third, Ernest Foster, Wenatchee.

Grimes Golden—First, John Bengel, Spokane; second, W. J. Enright, Chester.

Jonathan—First, W. H. Dunn, Opportunity; second, J. M. Maloney, Hunters, Wash.; third, C. M. Lockwood, Opportunity, Wash.

McIntosh Red—First, S. M. Young, Summerland, B. C.; second, James Rooke, Summerland, B. C.

Rome Beauty—First, Fred R. Jewell, Mabton, Wash.; second, N. V. Campbell, North Yakima; third, J. B. Schon, Wenatchee.

Spitzenberg—First, Roscoe Sheller, Sunny-side, Wash.; second, J. D. Godwin, Shorts Point, B. C.; third, J. C. Dun-Waters, Fintry, B. C.

Stayman—First, Fred A. Benson, North Yakima; second, J. R. Fordyce, Opportunity, Wash.

Tompkins King—Third, R. A. Jones, Spokane.

Wagener—First, E. A. Schon, Vernon, B. C.; second, Joseph Burrows, Vernon, B. C.; third, W. T. Robbins, Mead, Wash.

Winesap—First, August Woodyard, Sunny-side, Wash.; second, C. W. Tuebner, Opportunity; third, W. E. Kirkpatrick, Omak, Wash.

Winter Banana—First, A. B. Allinson, Opportunity; second, F. H. Waters, Selah, Wash.; third, J. B. Felts, Spokane.

Winter Permain—First, Sherman Gatten, Mead, Wash.

Yellow Newtown—First, H. C. Mellar, Summerland, B. C.; second, J. B. Schon, Wenatchee; third, John Scott, Wenatchee.

Northern Spy—First, James Rooke, Grand Forks, B. C.; second, R. A. Jones, Spokane.

Five different varieties—First, C. M. Lockwood, Opportunity; second, T. Uribe, Peach, Wash.

TEN-BOX LOTS

First prize, \$10; second prize, \$25; third prize, \$20.

Arkansas Black—First, Henry Van Marter, Opportunity, Wash.

Delicious—First, Wellington Deitch, Wenatchee; second, V. C. Merrill, Mabton; third, Ernest Foster, Wenatchee.

Grimes Golden—First, W. J. Enright, Chester.

Jonathan—First, C. M. Lockwood, Opportunity; second Emerson Brothers, Peach.

Rome Beauty—First, J. B. Schon, Wenatchee; second, Fred Jewell, Mabton; third, Thomas Hooker, Spokane.

Spitzenberg—First, Fred Benson, North Yakima.

Winter Banana—First, Joseph Burrows, Vernon, B. C.; second, Tredinnock Farms, Mica.

Wagener—First, E. A. Schon, Vernon, B. C.; second, W. T. Robbins, Mead; third, J. B. Felts, Spokane.

Winesap—First, J. B. Schon, Wenatchee; second, C. W. Tuebner, Opportunity.

SWEETSTAKES PRIZES IN BOX APPLE COMPETITIONS

To the exhibitors having the largest number of boxes in the prize-winning class of all box competitions:

C. M. Lockwood, Opportunity, Wash., first, \$10 and grand prize diploma.

W. J. Enright, Chester, Wash., second, \$20.

FIVE-BOX SWEETSTAKES

To the exhibitors winning the most prizes in the five-box lots:

R. A. Jones, Spokane, first, \$20.

C. M. Lockwood, J. B. Schon, J. D. Godwin, J. C. Dun-Waters and F. B. Supleo tied for second prize of \$10.

GENERAL DISTRICT DISPLAYS

Lot No. 1—Best general collective display from irrigated land, shown by commercial clubs, associations, unions, counties or districts. First prize, \$100. Spokane Valley display, comprising Greenacres, Opportunity and Otis, Wash.

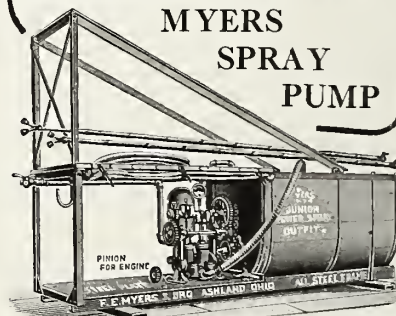
ORIGINAL AND ATTRACTIVE FEATURE DISPLAYS

Lot No. 1—By district, association, lodge, society, county or union. First, \$150, Walla Walla Commercial Club; second, \$100, Cashmere Fruit Growers' Union; third, Prosser Commercial Club.

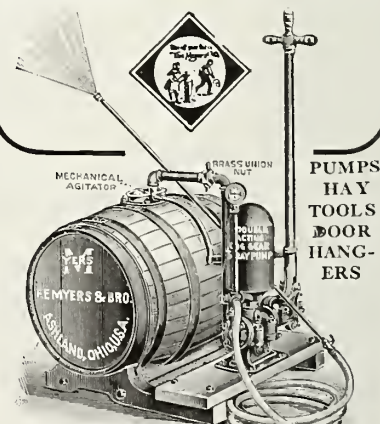
Lot No. 2—By an individual. First, \$150, Fanny Break, Spokane; second, \$100, Edith A. Proudfoot, Fairfield; third, William Siebels, Spokane.

Lot No. 3—By a firm, corporation, etc., for advertising purposes. First, \$100, North Pacific Fruit Distributors, Spokane.

IF YOU RAISE FRUIT or VEGETABLES YOU NEED A MYERS SPRAY PUMP



A lot of people who own small orchards or have a few fruit trees or vines and shrubbery around their homes, are following the example set by leading fruit growers and are spraying MYERS WAY. The reason for this is summed up in a few words—MYERS SPRAY PUMPS are practical proven machines ready for real service when spraying time arrives. No failures! No experiments! No cheap hose or nozzle to contend with. —All Styles Uniformly Constructed—Bucket, Barrel or Power Outfits for every spraying requirement. Catalog on request. Ask your dealer or write us.



F. E. Myers & Bro. 120 Orange St. Ashland, Ohio

Ashland Pump and Hay Tool Works

Proper and Thorough Spraying Immeasurably Beneficial

By Jay L. Reynolds, Horticulturist, Spokane, Washington

THE devout preacher says, "Let us pray." The successful orchardist says, "Let us spray." We need always to pray, but proper and thorough spraying will help the prayers immeasurably in the production of first-class fruit. The expense and trouble of spraying is not great if gone at at the right time and in the right way, and proper spraying is one of the great things which mark the difference between success and failure in the apple business. The fellow who does not "spray," "prune" and "thin" is the fellow who raises cull apples. "In times of peace prepare for war." Order your spray materials in January or February and get it on hand, then when the time comes to use it you will not have delay. Also see to it that the spray outfit is in good order long before you expect to use it, then you will not have to wait and fuss and fuddle and swear at the other fellow when the right time comes to use it. There is a right time, and if you spray then you will get the best results, if you do your work thoroughly, and if you do not spray then you will not get the best results. Mail a postal card to the agricultural college of your state and ask them for the "spray calendar" for the current year. It will give you some good information.

There are four standard spray materials of proved value and they are all you need. Stay by them. Let the other fellow do the experimenting. It is expensive and uncertain. The four to which I refer are lime-sulphur, arsenate of lead, bordeaux mixture and black-leaf "40." If these spray materials are applied thoroughly and at the right time, there will be little or no need of any others. Later herein I will call your attention to "the right time," but first let us enumerate the principal pests we have to look out for, and which deposit their eggs upon some part of the tree. The woolly aphis, which do most of their damage upon the roots of the trees, the green aphis and the black aphis. The black aphis, however, is said to be nothing more than the green aphis a little later in the season, when a certain smut has formed upon the honey-dew excretion of the aphis, which makes the insect as well as the foliage more or less dark colored. It makes no difference whether they are the same or not, the treatment would be the same. Then, in some localities, there is what is called the purple aphis, which appears early in the spring on the succulent leaves or fruit sprus and the tips of tender shoots. These will be observed, generally, on the underside of the leaves which are curled up. They are sometimes called the leaf-curling aphis, but that name could as well be applied to the green aphis, so it means nothing. Generally speaking, the purple aphis will not be found in the orchard after about the first of June. These constitute the aphid or tree louse family, so far as the orchard-

ist is concerned, and all of them deposit their eggs upon the tree in the fall of the year, generally out on the terminal limbs.

The bud moth is a very small insect, but a bad one economically. It deposits its eggs under the rough bark in the crotches of the trees, and its eggs are so minute and so nearly the color of the bark that they cannot be seen with the naked eye, indeed it is almost impossible to discover them with a powerful magnifying glass. So you may have them on your trees and not know it. The larvæ or worms eat into the buds and destroy them. The result is, no foliage or fruit where they have done their work.

The red spider is another minute insect which feeds upon the buds and leaves of the trees, and so devastating is their work that economically it stands the orchardist well in hand to be on the lookout for them. They also deposit their eggs upon the trees in the fall. Then there is the tent caterpillar and many other caterpillars and worms, the eggs of all of which are deposited in the fall.

If you discover aphis, bud moth or red spider on your trees after the foliage is out, spray with black-leaf "40" according to the directions given on the can.

The San Jose scale, the oyster shell bark louse and many other scales are liable to appear, if they are not already present, but remember that all of these different insect pests and scales can be more successfully combated with lime-sulphur solution if applied at the right time in the spring.

Lime-sulphur kills by contact and instantly, very quickly losing its strength in the open air, and the right time to use it is when the buds begin to swell in the spring so that the green shows a little. The reason why this is the best time and why we get the best results from the use of lime-sulphur in combating these insects at this time is because, when the weather is warm enough to start the buds to growing (swelling), it is also warm enough to begin to hatch all these different species of eggs and to loosen up these scales. Then they are the most vulnerable (tender) and are easily killed by the application of the lime-sulphur solution. But remember this: You must get the lime-sulphur solution upon these eggs and scales if you want to kill them, so let me impress upon you the necessity of thoroughness. Fungous diseases, such as apple and pear scab, baldwin spot or fruit spot, moss and lichen, or any other spore-forming fungi, can be successfully combated with this material applied at this time. The one spraying accomplishes it all if done with thoroughness and force, except that with apple and pear scab and baldwin spot, another spraying should be given with summer-strength bordeaux when the apples are about

the size of small marbles. It will be better also to spray in autumn, just after the leaves fall, with lime-sulphur 1 to 14 if scab and baldwin spot is affecting your fruit.

Spraying done in winter will do little or no good. In fact it is a waste of time and material, because these diseases and scales and eggs of insects are of just as much importance in the great infinite cause of things as that of the fruitgrower, and you will find them wonderfully and perfectly protected by nature from devastation, so that your destroying solution cannot touch them vitally. But if you wait until mother nature begins to cuddle these little fellows in her great lap of spring, touching them with gentle zephyrs and awakening them with warm kisses of sunlight and they are bestirring themselves, throwing off this winter protection, then you will find them vulnerable—easily destroyed. If you spray at this time, doing the work as it should be done, thoroughly and with force enough to drive the solution into crevices and under the bark scales, you will destroy practically all the eggs and little insects which already may have been hatched out, as well as the spores of all the fungi mentioned and others as well.

In my experience and observation, I find that the prepared commercial lime-sulphur concentrate is cheaper than the solution prepared on the farm, when you take the time, cost of material, fuel and cost of apparatus into consideration. Again, it is practically impossible to make two batches of this solution alike with an inferior apparatus, and for this reason you will be liable to have it too weak or too strong, with anything but dependable results. Still further, there is always lots to do on the farm at the time of making, for the home-made solution must be used as soon as made, or practically so. The work of making the preparation, together with spraying and all other work pressing at this time, makes home-made lime-sulphur solution a discouraging proposition to say the least. If the commercial lime-sulphur concentrate tests 33 to 34 Baume as it should, I find that one of concentrate to fourteen of water will give as good results as a stronger dilution.

Arsenate of lead is used as an insecticide for the poisoning of all mandibulate or biting insects that feed upon plant tissue and can be applied at any time without injury to the foliage. Results can very quickly be seen when a tree affected with cherry slugs is sprayed with arsenate of lead. Mr. Slug quits business immediately. This insect appears usually about the time the cherries are beginning to get ripe, and unless checked may continue until they defoliate the tree. It is a black slug about three-eighths to one-half inch in length, appearing upon

Continued on page 37

Crown Gall, Black Knot, Plant Tumor or Plant Cancer

By Clayton O. Smith, Experiment Station, Whittier, California

THE disease called crown gall, black knot, plant tumor or plant cancer has for many years been well known to the horticulturist and plant pathologist. It is only within a few years that the cause of the trouble has been thoroughly investigated by Dr. Erwin F. Smith and his associates of the United States Department of Agriculture, and their bulletins are available to any who may be especially interested in this trouble.

Crown gall is nearly world-wide in its distribution, being found in all parts of the United States, in Canada, South Africa, Asia, countries of Europe, New Zealand, Australia, Mexico and probably also in South America. The malady is a serious one on many of our orchard trees, as it not only decreases their vigor and productiveness, but at length is a frequent cause of their death. A large number of different species of trees are susceptible. In fact the organism causing the disease is almost omnivorous as to its choice of its host, but it is especially severe in the more important economic trees, such as the apple, almond, apricot, cherry, grape, peach, plum, prune and walnut.

The disease, when once seen, is easy to identify, as it is characterized by an enlargement or growth of soft, spongy tissue of a more or less spherical shape. These growths are usually situated just below the surface of the ground in the trunk or body of the tree, often extending downward some distance on the larger roots, and may be found on them at some distance from the trunk. The galls continue to increase in size from year to year until a large excrescence may be formed. The tissue produced is abnormal and easily decays, making an especially favorable place for wood-destroying fungi to gain an entrance to the tree. While the galls are usually below the ground, occasionally aerial ones are formed on the trunk and large branches. These are hard and cause little or no serious effects on the tree, except when they may be numerous, as on grapes of the *Vinifera* varieties.

Trees affected with the disease may not die for some years, indeed will not until the trunk is entirely girdled with diseased gall tissue. The affected trees usually do not make as rapid growth as healthy ones, but for a time produce a large amount of fruit. The cause of the abnormal number of fruit is the same as in twigs that have been ringed to make them produce. The root of the tree suffers most and soon ceases to make further growth because of the lack of elaborated food supplied it from the leaves. Severely diseased trees may show improperly developed trunks, in that they are flattened or have deep grooves directly above the galls. In our study of crown gall we have found these two characteristics a sure indication of the presence of crown gall.

All abnormal growths of trees are not caused by crown gall. (1) Some of these other enlargements are caused by insect stings or by the placing of the eggs in the plant tissue. (2) Some of the galls in the roots are caused by small worms called nematode worms. These closely resemble small crown galls and are found on the roots of trees and vegetables. (3) Certain species of fungi are capable of causing galls. One fine example of this is the gall produced on citrus twigs in Cuba and Porto Rico by a fungus called *Sphaeropsis tumefaciens*. (4) Tubercles are found on many leguminous plants. (5) A gall caused by a different species of bacteria from that of crown gall is found on sugar beets. (6) The knot or gall of the olive is caused by a distinct species of bacteria. In addition to these there are other aerial galls on the twigs of several different kinds of trees the cause of which is not yet fully understood. Citrus trees occasionally have these aerial galls, also eucalyptus seedlings have small knots that never cause any serious injury. The galls of quince are not very well understood and do not seriously harm the affected trees. There are also natural galls on certain varieties of olive that should not be confused with crown gall. Locust trees sometimes have large galls on the trunk

which probably are not the same as crown gall.

The cause of crown gall has been fully demonstrated to be a species of bacteria by the name of *Bacterium tumefaciens*, a tumor-forming organism. The germs are extremely small and probably live in the soil or organic matter as saprophytes, and from here enter into the tissue of living plants through some injury in the bark. Artificial galls have been repeatedly made to develop by simply pricking the healthy bark with a steel needle previously touched to a pure culture of the causal organism. In the gall or tumor tissue comparatively few bacteria are present, and the microscope does not conclusively demonstrate the cause of the trouble under ordinary histological methods. The germs live inside the cells of the host and by the products produced during their development cause new cells to be formed with unusual rapidity. The abnormal tissues thus formed show cells with very thin walls, at first soft and often with no well-defined bark or epidermis. The germs can often spread through the plant by the developing of a narrow portion of tissue into a tumor strand. This strand is invisible externally, but from it secondary tumors very often develop.

Strong evidence has been presented by Dr. Erwin F. Smith showing many similar characteristics to exist between human tumors and those of plants, but to present these would be outside the scope of this article. All attempts, however, to produce tumors on the lower animals, fishes, frogs, etc., by inoculating them with the crown-gall organism have been failures, or at least uncertain in their results. It is therefore safe to conclude that the organism causing plant gall tumors cannot produce tumors in animals. The crown-gall organism, however, is a virulent plant parasite and is capable of producing galls in a large number of plants when placed in their tissue by artificial inoculations. Galls have thus been produced artificially on several kinds of trees upon which they have never been found to occur naturally. The most interesting of these are the different species of citrus, as the orange, lemon and lime. Negative results have always been secured from inoculating the avocado and the olive. The fig and loquat are only with difficulty infected. Often the inoculations when made do not at once show positive gall information, but may, as in the quince, remain in a dormant condition. In our quince inoculations the injury made by the puncture inoculations healed, and it was nearly a year before the small, gall-like formations appeared. These eventually, however, grew into large galls. The condition of the tree growth affects the rapidity of gall formation—no growth of tree, little or no development of gall. Inoculation late in the



Artificial Inoculations on Apricot Seedlings with a Pure Culture of the Crown Gall Organism *Bacterium Tumefaciens*



Natural Gall in Young Apple Tree That Has Become Infected at Place Where Tree Was Bench Grafted.

fall often will not develop until active growth in the following spring. May not this retarded development of the disease account for the large amount of gall that sometimes develops on young orchard trees from stock that was carefully inspected and appeared to be perfectly free from crown gall?

Crown gall infection must start from soil containing the disease-producing organism. There can be little doubt that the soils of California are often naturally infected with crown gall. This is especially true of those that were formerly wooded or have previously grown stone fruits, especially if the trees grew on peach roots. Little is actually known as to how actively the disease spreads under nursery irrigation. The fact that where irrigation is practiced crown gall appears more prevalent would suggest that the disease is possibly spread in this way.



Seedling English Walnut Showing Crown Gall. Similar galls are common on the trees of the stone fruits, especially when peach or almond roots are used. Plum roots are much more resistant.



CONSIDER THE FUTURE GENERATIONS DON'T LEAVE THEM WORN OUT FARMS

Productive soil that is continually being "worked" will soon run out of producing ability and become the shell of its former strength.

The game laws of TODAY are for the future generations. The reliable fertilizers of the present insure a legacy for the heirs of to-morrow—a guarantee of SIGHTLY orchards instead of SICKLY ones. To keep your farm producing—give back to the soil that which is taken out. Otherwise its producing possibilities will REDUCE instead of PRODUCE—DECREASE instead of INCREASE.

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are the "ounces of prevention." The guaranteed analysis shows the proper proportion of animal ammonia, nitrogen, phosphoric acid and potash that revives strength—gives new life—enables the next crop to feed upon the necessary sustenance for a good healthy harvest. Avoid the worn-out-land danger. Insure against poor crops—increase your land's producing ability by ordering this famous fertilizer NOW. Fertilizer booklet F-37 Free. Tells about fertilizers, their application and the results they produce for others.



On vigorous-growing seedlings like almonds there is often a scar directly beneath where the seed is attached that would be a most favorable place for gall infections. Also almond seedlings sometimes show small checks or cracks in the surface bark. The gall usually appears at the crown and very close to where the seed was formerly attached. Some experimental work is in progress in treating pits before planting with a thick paste of bordeaux mixture, with the hope that possibly this will sterilize a small area of soil immediately surrounding the pit and so possibly prevent this early infection of the tree, if such there be. Any injury to the trunk or root in the nursery or in digging the trees would be a favorable point for infection. The organism is entirely a wound parasite and could gain entrance in any mechanical injury, animal or insect bite.

The following is a list of plants upon which crown gall has been found

to occur naturally: Apple, apricot, almonds, Arbutus unedo, alfalfa, beet, clematis (wild), clover (red), cherry, chestnut, cotton, daisy (Paris) or marguerite, grape, hop, honeysuckle, loganberry, peach, pepper tree, plum, prune, pear, parsnip, pecan, quince, raspberry, rose, salsify, sterculia, Victoria bottle tree, turnip, willow, English walnut, California black walnut, Eastern walnut. Galls have been artificially produced on the following in addition to those named above: Catalina cherry, eucalyptus, citrus, sweet orange, sour orange, lemon, lime, Angiers quince, Japanese walnuts, butternut, a large number of different species of cultivated and wild plums, including the following: Prunus cerasifera, P. Americana, P. triflora, P. domestica, some of whose varieties are quite resistant; P. amygdalus, P. avium, P. davidiana, P. hortulana (wild goose), P. Allegheniensis, P. Simonii, P. platycarpa.

Continued in next issue

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Anywhere of
Lilly's Tested
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Points to remember when consigning
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- 1.—We Specialize in Apples**
- 2.—All Consignments Receive our
Personal Attention**
- 3.—The Fruit is Sold by Private
Treaty on its Merits**

CABLE ADDRESS: BOTANIZING, LONDON

Apple Growers of the Northwestern States

AT the recent National Apple Show a By-Products Board was appointed consisting of the following gentlemen: Truman Butler, Hood River, Oregon; Gordon C. Corbaley, Spokane, Washington; M. J. Higley, Payette, Idaho; J. O. Holt, Eugene, Oregon; J. L. Hughes, North Yakima, Washington; Conrad Rose, Wenatchee, Washington; W. H. Paulhamus, Puyallup, Washington; H. M. Sloan, Florence, Montana; D. A. Sny-

der, Dayton, Oregon; Paul H. Weyrauch, Walla Walla, Washington, with instructions to do whatever in their judgment was necessary to establish by-products plants in all communities where plants of this kind could be of advantage to the growers, and to do what the board could in behalf of a more concentrated selling agency or whatever might be accomplished in aid of a better condition in the fresh fruit

marketing situation. This board, so appointed, held its first meeting in the parlors of the Commercial Club in North Yakima, Washington, Saturday, December 5, and organized by naming W. H. Paulhamus chairman and Gordon C. Corbaley secretary.

The first resolution passed, after organization, was on motion of Truman Butler, of Hood River, that it was the sense of the committee that the most important task under consideration was a closer and better organization of the selling agencies of the fresh fruit. It was the unanimous opinion of all the members present that the Butler motion was timely. Therefore a meeting of the By-Products Committee was called at the New Washington Hotel, Seattle, for January 23, 1915, at 9 a. m., after which the by-products question was taken up for consideration so far as it related to the Yakima district, with a final result that all of the selling agencies doing business at North Yakima agreed to finance and get back of a cannery or evaporator, a cider and vinegar plant, or such other by-products plants as were advisable for that particular district.

In the judgment of the By-Products Committee the Seattle meeting on January 23 will be one of the greatest importance to the growers of tree fruits in the Pacific Northwest. The apple growers of the Wenatchee district are to hold a convention in Wenatchee on December 29. This convention is to be composed of three delegates from each precinct in the apple growing district tributary to the Wenatchee Valley. It is the understanding of the committee that this convention desires to select

Better Crops on Perfect Seed Beds

**Prepared With the
ACME
Pulverizing Harrow**

AFTER plowing sod or stubble it must be worked down thoroughly and pulverized. Sods, clods and lumps must be broken up; air spaces and voids worked out and filled to insure a seed bed that will give **BETTER CROPS**. Make available the plant food in plowed-in manure by thoroughly mixing with pulverized soil. **BETTER CROPS** will result.

The "ACME" Pulverizing Harrow makes possible the perfect seed bed. Sizes 3 to 17½ ft. wide for one to four horses.

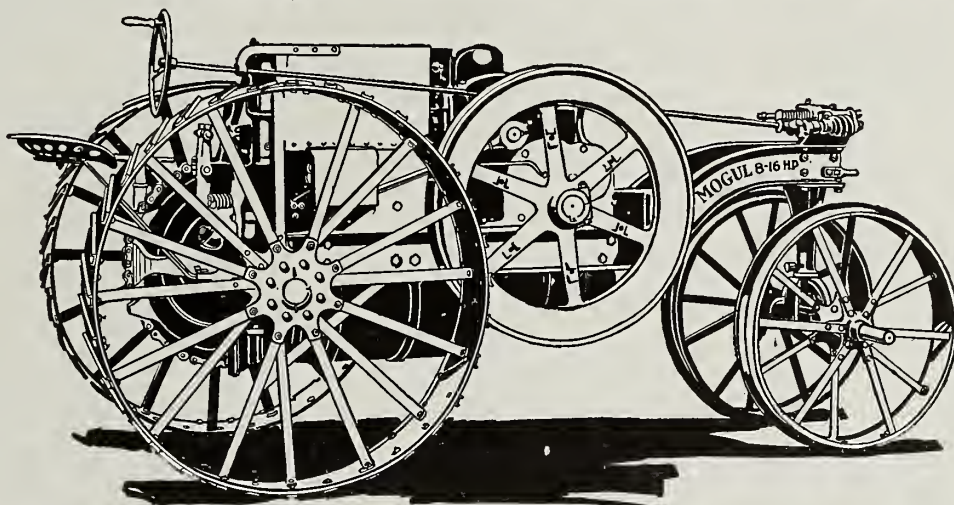
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Our New Year's Announcement

A Mogul Orchard Tractor for \$675



We announce for 1915 an all-purpose orchard tractor, with 8-H. P. at the drawbar and 16 on the belt

An Easily Handled, Short Turning, All-Purpose Tractor

This new Mogul 8-16 tractor will do the work of eight horses in the orchard.

Being a four-wheeled, all-purpose tractor, you can use it every day.

It will do plowing and seeding as well as orchard cultivating.

It will draw manure spreaders, mowers or binders.

You can take it into a hay field to draw a wagon and hay-loader.

Any farmer can buy this new Mogul 8-16 tractor for \$675.00, cash, f. o. b. Chicago.

The man who can use one of these Mogul tractors pays, at this price, the least for which a good, reliable, all-purpose 8-16 tractor can be sold.

If you want to use a Mogul 8-16 tractor for spring work, your order should be placed now with the I H C dealer.

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ten delegates to meet with the By-Products Committee for consultation.

It has occurred to the By-Products Committee that it would be advisable to call an apple growers' convention in Seattle at 9 a. m. January 22, 1915, place of meeting to be designated later, so that the representatives of the growers themselves could have a conference with the By-Products Committee the day preceding the By-Products Committee meeting with the selling agencies. Therefore the By-Products Committee, by its president and its secretary, requests that each and every apple growing district hold a similar convention, selecting ten delegates from each district to meet with the By-Products Board in Seattle January 22, 1915.

The districts that the Board has particularly in mind in issuing this call are: Wenatchee, Yakima, Hood River, Southern Idaho, Walla Walla, Rogue River, Spokane, Montana, Lewiston, and the Garfield-Moscow territory. These are the districts that are particularly represented in the present organization. We feel certain, however, that a similar representation from any well established district will be welcomed at this conference.

The By-Products Board suggests that these delegates from the apple growing districts be selected regardless of the manner in which their fruit is now being marketed, and with a view of getting delegates who are now marketing their fruit through all different agencies, but that they should not be officers or salaried representatives of any organization. In other words, the By-Products Committee desires to get the best sentiment from all the different sections and from all different classes of growers, with a view of trying to better the marketing conditions as they now exist. Where there is a growers' organization of any kind, it is requested that this organization take the initiative in calling such a convention. Where there is not an organization, it is urged that any ten growers sign a call for a convention, and that the conventions be held not later than the 20th of January.

In issuing this call, the By-Products Board wishes to ask the earnest cooperation of every individual vitally interested in the fruit business of the Northwestern states. We ask this cooperation in order that the gathering at Seattle shall be a practical, earnest

meeting, gotten together for the purpose of developing some common-sense solution of the present marketing situation.

The apple business is a business in which millions of dollars are invested. The pressing need of that business is better organization and more efficient marketing. This is not a time when we need visionary plans or that we want to try to do the impractical thing. It is a time for the exercising of hard-headed sense, and we wish to ask the different districts to send the best and the ablest of their men to this Seattle meeting, in order that they may unite in forming a judgment that will really get results. Address communications to and ask information of Gordon C. Corbaley, secretary of the Chamber of Commerce, Spokane, Washington.

We have just received a very handsome and instructive catalog from J. A. Bauer, Judsonia, Arkansas, a strawberry specialist. The catalog contains considerable information of value to strawberry and small fruit growers on the production of small fruits, showing how to plant, care for and pick.

BETTER FRUIT

HOOD RIVER, OREGON

Official Organ of The Northwest Fruit Growers' Association
A Monthly Illustrated Magazine Published in the
Interest of Modern Fruit Growing and Marketing
All Communications Should Be Addressed and Remittances
Made Payable to

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ADVERTISING RATES ON APPLICATION

Entered as second-class matter December 27, 1906, at the
Postoffice at Hood River, Oregon, under Act
of Congress of March 3, 1879.

"Better Fruit," Past, Present and Future.—Nine years ago, I, E. H. Shepard, editor and sole publisher of "Better Fruit," on account of the progressiveness of horticulture, conceived the idea that the fruit grower, particularly in the Northwest, wanted a different kind of paper from any that was being published. Therefore, after a great deal of thought and study, I planned the policy of "Better Fruit" along original lines and published the first number in July, 1906.

My idea was that the fruit grower wanted practical information about every feature of the business. I believed that in order to convey this information in an effective way that it would be necessary to illustrate many features in different articles; I believed that the fruit grower wanted a high class publication in every respect; I believed that he wanted it in attractive form, printed on good paper, handsomely illustrated, and I believed that it could be rendered additionally attractive by running the front cover pages without advertising. In the first issue I outlined what the policy of "Better Fruit" would be and have consistently stuck to that policy, varying it slightly to meet changing conditions. The articles have been valuable, instructive, scientific and practical. They have been handsomely illustrated with the best engraving that could be done; the paper has been sixty-pound book stock, with cover pages of eighty-pound stock; the printing typographically has been artistic; the advertising has been clean; the articles advertised are practically all those which the fruit grower uses or consumes, either directly or indirectly, in his business.

It was evident from the first that "Better Fruit" was the kind of publication that the fruit grower wanted. It is with some pride that I feel justified in saying that "Better Fruit" has been a success. By that I mean it has been appreciated by the fruit grower and produced results for the advertiser. I say "appreciated" because the fruit growers have subscribed generously and continuously. The subscription list has increased in a moderate way, regularly; the advertising has continued steady. I believe "Better Fruit" has carried regularly in each number for nearly nine years more pages of advertising than any other similar publication, so therefore I think I am justified in saying "Better Fruit" has met with success. I believe it was a success inasmuch as I have achieved something that has bettered the fruit industry and helped the fruit grower. I have worked faithfully and energetically for ten years in accomplishing this achievement.

"Better Fruit" has been more than successful. It has been progressive; it has always taken the initiative and in many instances has anticipated the conditions and necessities of the fruit industry. It is with considerable satisfaction that I call attention to a few of the vital factors which "Better Fruit" has advocated in advance, as necessary in connection with the fruit industry. In 1912 I realized that a greater consumption of apples was going to be necessary in order to sell the increased quantities that would be produced on the increasing acreage which was being set. Therefore in October, 1912, "Better Fruit" published a special edition called "The Educational Cooking Edition—209 Ways of Serving Apples as Dessert." While this edition commanded a great deal of attention and much interest, the idea really did not take root and was not utilized in an extensive way by the fruit industry until in 1913 when the International Apple Shippers' Association published a booklet entitled, "197 Ways of Serving the Apple as Dessert," of which over half a million copies were sold. In 1914 the Oregon-Washington Railroad & Navigation Company published a booklet of "150 Recipes for Serving the Apple," employing a special demonstrator to travel throughout the country to show the people how to cook apples. In 1913-14 a demonstration in cooking apples was given at the National Apple Show at Spokane.

In 1912, realizing in advance that many of our lower grades would not justify Eastern freight shipments and that much fruit would go to waste during the period when the markets were glutted, it was very clear to me that it would be necessary for the Northwest to give attention to by-products, so in May, 1913, I published a special edition of "Better Fruit" devoted to by-products, with another in April, 1914. The trustees of the National Apple Show at Spokane were quick to catch the importance of this suggestion as a future need for the industry and in 1913 called a conference which resulted in a com-

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Will Save Your Trees

Use this Powerful Insecticide
For Blight, Rust, Scale,
Scab, Codlin Moth and
All Aphids

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To the number of about 1200 species stand ready to attack your orchards; some of them may be busy already, working day and night and costing you hundreds of dollars. **MUSTONIA** will destroy them and prevent them coming again.

PLANT LICE

Especially on apple trees, aphids are very destructive. **MUSTONIA** will remove the apple aphids, European grain aphids and the clover aphids, and keep your trees clean and free from rust, scale and scab.

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Birds, bees and insects carry blight from tree to tree. Prevent its ravages with **MUSTONIA**.

Spray with **MUSTONIA** three to four times a year and your trees will be healthy and vigorous. Get your order in early for spring delivery. Write for literature on spraying and tree planting.

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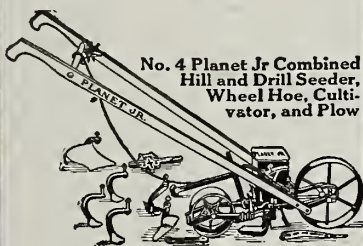
mittee being appointed which did splendid work in this line of development. Another conference was called in 1914 and a new committee has been named for the year 1915, which will endeavor to furnish all the necessary information about by-products facilities. They will also assist in forming a marketing organization for the disposal of products at satisfactory prices.

In 1909, realizing the exorbitant retail price of apples was a menace to consumption, I began a crusade against exorbitant retail profits. I, like every other reformer, was much criticized, and it took almost five years for this idea to sink in and take root. But again the anticipation of "Better Fruit" was realized, although it took five years to do it, and today every fruit grower is up in arms against the exorbitant retail prices at which apples are sold. Perhaps more significant than this is the fact that the International Apple Shippers' Association have advocated that every dealer use his influence to induce retailers to sell apples at a reasonable profit and so help increase consumption.

In 1904, over ten years ago, the editor of "Better Fruit" conceived the necessity of fruit growers' associations in order to assemble the products, properly load them to meet the requirements of the trade, and distribute them over the United States. My addresses at the different horticultural meetings were listened to, but at first there was little indication that any result would follow. In fact, I do not think I would be departing much from the truth if I were to say that these addresses at that time were considered quite idealistic, and in reality a joke, but in ten years the idea as urged by the editor of "Better Fruit" in reference to associations in the Northwest is so generally admitted to

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The farm and garden tools that save your time, lighten your labor, and get bigger crops—the longest-lasting and most economical implements made. Fully guaranteed.



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Hill and Drill Seeder,
Wheel Hoe, Cultivator, and Plow

Soon pays for itself in the family garden as well as in the larger acreage. Sows all garden seeds (in drills or in hills), plows, opens furrows and covers them, hoes and cultivates quickly and easily all through the season.

No. 8 Planet Jr
Horse Hoe and
Cultivator



Stronger, better-made, and capable of a greater variety of work than any other cultivator made. Non-clogging steel wheel. Depth-regulator and extra-long frame make it run steady. Adjustable for both depth and width.

72-page Catalog (168 illustrations) free

Describes 55 tools including Seeders, Wheel Hoes, Horse Hoes, Harrows, Orchard- and Beet-Cultivators. Write postal for it.

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We carry stock in San Francisco and Los Angeles. Agencies in all principal Pacific Coast Cities.

be one of the necessary solutions of the fruit business that at the present time we have 150 associations—a pretty good growth. When I commenced advocating the association idea we had but three in the Northwest.

In 1906 I published the first Packing Edition of "Better Fruit," which stood for an improved pack and standardized grading. This educational feature of "Better Fruit" has resulted in much good and a big improvement in packing and grading, as every fruit grower, every fruit dealer and every consumer knows. All the improved methods in cultivation, irrigation, pruning, spraying, etc., have been given to the readers of "Better Fruit." The immense amount of value that has resulted to the fruit growers from the educational work that "Better Fruit" has done along these

lines is beyond estimation or comprehension.

Many have asked me why "Better Fruit" has been a success. I don't know that I can answer the question fully or completely, but I feel sufficiently satisfied on a few points to mention them as contributing to the success of "Better Fruit." I believe a man in order to edit a publication must have a certain amount of ability, a certain amount of knowledge and a certain amount of experience. This covers a broad field. My father learned orcharding in New England, following it in California. I grew up in his orchard and there had my early training. After graduating from the University of California I engaged in the wholesale mercantile business for myself for twenty years. In 1903 I came to Hood River, where I have been a grower of fruit ever since, with my home in the orchard. I have served as manager of our association here for six years and as director for nine years. I believe in order to edit and publish a fruit growers' paper successfully that the man must first have a good education, second, a good training in fruit growing. Third, he must have a knowledge of marketing from actual experience. Fourth, he must have business experience and ability, and, fifth, it is important that the editor live in a fruit country where fruit growing is the principal business, in order to understand fully the requirements of the fruit grower, what his obstacles are and what to do to overcome them.

But "Better Fruit" has accomplished a good deal more than what I have indicated in connection with the fruit industry. By that I mean it has done something to make the world better. The name was not only an original name, but happily selected because it is a wholesome name and stood for something. To illustrate what I mean: "Better Fruit" was the first to use the word "better" in the significance which is conveyed in the title. The railroads have adopted the suggestion; agricultural experts have adopted the idea and are all advocating "better fruit" and "better farming"; automobilists and public men have adopted it and are advocating "better roads"; educational people have adopted it and are advocating "better schools"; municipalities are advocating "better government" and "better sanitary conditions"; moral societies have made a slogan from the word "better" and the word now is being capitalized in this sense by hundreds and thousands of advertisers all over the United States. It has become an American slogan.

The Present.—"Better Fruit" is today a continuation of what it has been in the past, with some improvements, and stands ready to help the fruit grower and the fruit industry in every possible way.

The Future.—The future of "Better Fruit" for the fruit growers is in your hands. It needs your support. If you give this cheerfully and generously it is all I ask. By your support I mean



This man believes in enjoying life. He lives in the country but he has the advantage of the city. His home is equipped with kitchen sinks, hot and cold water, modern bath room, sanitary toilet, wash room. His garden has taps here and there and his dairyhouse and barn has running water where needed. It cuts down his own work and very much reduces the work of the women folks. He likes it, his wife likes it, and his children like it. He had the goodness of judgment to invest in a

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WATER SYSTEM

Hundreds of these systems are making country homes brighter and more comfortable. They are economical, dependable, simple. If you have a well, cistern, spring or creek on your place you can have running water in your home. We guarantee satisfaction.

Now the chap below believes in "getting along with things as they are." His wife totes water from the well, lifts the pail a hundred times a day. He spends hours pumping water for stock when he has other things to do. His children leave for the city as soon as they can get away where they can at least have a few comforts.

Don't you think you'd better take our tip and send your name and address for our Free Book No. W15 called "Through the Eye of the Camera."

**Mitchell, Lewis &
Staver Co.**

Portland, Or.
Spokane and Boise



ACME Foot Lift Weeder

ARIDING orchard cultivator and mulcher. Gets all the weeds—large and small. Used in orchards or for summer fallowing; keeps down weed growth and properly mulches surface soil. **Foot Lift Lever** enables operator, on seat, to clear off weeds that may gather while working. All steel construction. Light draft. Depth of cut adjustable. Price right.

Your John Deere Dealer Sells It!

What a user says about it:

No. Yakima, July 31, 1914

Dear Sirs:—I take pleasure in recommending the ACME Weeder as the best implement I ever used for killing weeds and pulverizing the ground and I have used all of them. \$100 would not buy mine if I could not get another one.

(Name on request)

Another User Writes:

Mosier, Oregon, Aug. 22, 1914

Gentlemen:—I consider the Acme Foot Lift Weeder the best tool for cultivating orchards that I ever used, and as a weed killer it certainly is perfection.

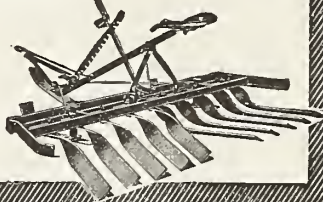
(Name on request)

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No. 8
8½ ft. wide



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is now open to the world, complete, unique and well worth the journey, the time and the expense. NOW is the time to go

VIA THE

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Three fully equipped modern trains from Portland daily with conveniences for the most fastidious, as well as the humblest traveler will bring you in safety to San Francisco where you can visit the

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with all its buildings complete and the exhibits being rapidly installed. En Route to San Diego you can visit many of California's famous resorts—Santa Cruz, Del Monte, Paso Robles, Santa Barbara, Long Beach, Catalina, Santa Monica, Mt. Lowe, the Old Missions, the Orange Groves and others as interesting and delightful.

Call on nearest agent for full particulars, fares, reservations, train schedules, literature, etc.

Southern Pacific

John M. Scott, General Passenger Agent
Portland, Oregon

The Exposition Line 1915

your good will, your help. I want every fruit grower in the Northwest to be a subscriber. It costs but \$1.00 per year. I want every fruit grower who is a subscriber to persuade every neighbor who is a fruit grower to become a subscriber to "Better Fruit." The greater our subscription list the better publication I can issue, because advertising can only be obtained on circulation in sufficient quantity.

"Better Fruit" will continue in the future, as in the past, to give the best methods, the best ideas about cultivation, irrigation, pruning, spraying, treating all the different diseases, cover crops, by-products, economy in production and harvesting, packing and grading, and in fact everything of value,—the best obtainable in reference to the production of better fruit.

"Better Fruit" will endeavor to furnish you information about association work and about marketing; it will continue in the future to give you estimates of the crops and the actual quantity shipped at the end of the season, so far as obtainable. From time to time it will give you good, reliable information about the general averages of prices that have been obtained by the different districts on different grades of fruit. I believe the fruit-growers in the Northwest want a good publication that will fill the requirements along the lines indicated in this editorial, and I hope I have done my work in "Better Fruit" sufficiently well in the past to merit your support in the future. I believe the fruitgrowers want a good publication, carrying out the policy of "Better Fruit" and

giving the kind of information that "Better Fruit" has given for almost nine years. I am sure they need one to enable them to better conditions. At no time in the past has a good fruit-growers' paper like "Better Fruit" been so vital a need as it is at present and for the future. I believe the fruitgrowers want it. If "Better Fruit" meets with your satisfaction and approval, I again solicit your subscription and earnestly request that you persuade your neighbors to subscribe.

In conclusion permit me to wish you a Happy and Prosperous New Year, and to say that I honestly believe that with the right kind of effort, directed in the right way, that we can overcome the problems that at present seem big barriers. I believe that eventually, through the right kind of educational methods and a better knowledge of marketing conditions, the fruitgrowers of the Northwest will solve the marketing problem.

Marketing Apples.—The experience of 1912 and the prices obtained were sufficient to indicate to the apple industry of the Northwest that steps would have to be taken to provide better and improved marketing facilities. Consequently the matter was given much attention and in 1913 an improved condition generally prevailed, which, owing to the fact that the crop was a moderate one in that year, proved fairly satisfactory. In 1914 a bumper crop of apples all over the United States was grown, which was probably the largest crop that had been produced since 1896. While no pools have been closed up to date, it is evident by the prices at which apples are selling that returns will be far from satisfactory to the growers this year; while it is possible that apple prices may pay the cost of production, it is quite evident that there will be little, if any, profit for the grower. Therefore the subject of marketing is commanding the attention, the thought and study of every apple grower as well as

GET THE STUMPS OUT

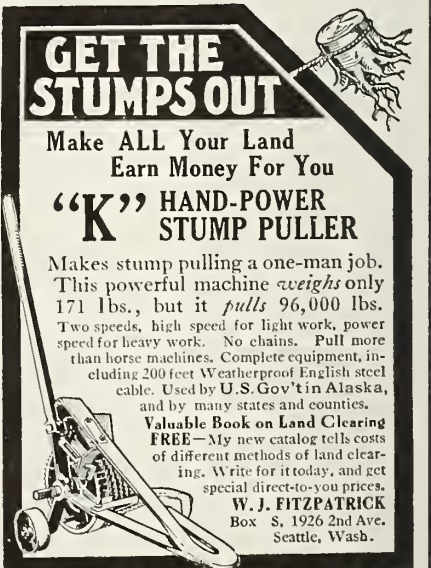
Make ALL Your Land
Earn Money For You

"K" HAND-POWER STUMP PULLER

Makes stump pulling a one-man job. This powerful machine weighs only 171 lbs., but it pulls 96,000 lbs. Two speeds, high speed for light work, power speed for heavy work. No chains. Pull more than horse machines. Complete equipment, including 200 feet Weatherproof English steel cable. Used by U.S. Gov't in Alaska, and by many states and counties.

Valuable Book on Land Clearing FREE—My new catalog tells costs of different methods of land clearing. Write for it today, and get special direct-to-you prices.

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Box 8, 1926 2nd Ave.
Seattle, Wash.



every individual connected with every one of the marketing organizations.

The complaint is more or less universal on the part of different marketing concerns that prices have been unnecessarily cut this year. Those who have been selling Northwestern apples in various cities and towns throughout the country, in addition, report that the wild and haphazard method of consignment has been a big factor in glutting the markets, resulting in apples being sold unnecessarily low. It must be evident to anyone that if a city consumes 10 carloads of apples in a week and receives 20 on consignment, the inevitable must follow and ruinous prices result. An opinion prevails among a great many who have given the matter attention that if the apples of the Northwest could be distributed uniformly, without conflicting and overcrowding markets, much better prices would have been obtained this year. It is evident in order to obtain good prices markets must not be unnecessarily crowded with consignments. In order that the different marketing concerns continue to do a profitable business, it is necessary that the apple growers receive sufficient returns to pay the cost of production and a fair profit on the investment. If this cannot be done then it must be evident that some of the marketing concerns will have to go out of business, and many of the men who are connected with them must therefore lose their positions. It is to be assumed that all of the men connected with the marketing organizations are broad-minded business men who have a thorough appreciation of these facts. It seems only fair and reasonable to assume that marketing organizations must realize that the growers must make a profit in order for the marketing concerns to continue to make a profit and the different officials connected with them to receive their salaries.

Therefore it seems reasonable to hope that the different representatives of the marketing concerns will meet together in an open and frank sort of a

Manager and Superintendent

Graduate expert in horticulture and agriculture, wide field experience, desires position. Capable of best results at least cost. Able to handle men, money and accounts for large concern. Now holds responsible government position. Splendid references. Address Box 722, care of "Better Fruit."

An Experienced Orchardist

Wants a position as manager or foreman. Have had several years' experience in Rogue River Valley, Oregon. Thoroughly understands pruning, spraying, irrigation and treatment of all orchard diseases. Past three years managing large orchard in Southern Ohio. Wish to return West. Present contract expires February 1. Best of references. Address B. L. ENOS, Gallipolis, Ohio.

For Sale or Lease

for term of years, 20 acres bearing apples; best commercial varieties, Eastern Kansas; six-room house. Address "K," care of "Better Fruit."

"BLUE RIBBON"

(EXTRA FANCY)

"RED RIBBON"

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Famous Brands of Yakima Apples

Packed under our personal supervision

Get in touch with us by wire or letter

Yakima County Horticultural Union

E. E. SAMSON, Manager

NORTH YAKIMA, WASHINGTON

way, and it is hoped that they will be willing to act in harmony with a view of evolving a plan or policy that in the future will eliminate the unnecessary and disastrous competition, the unnecessary cutting of prices and unnecessary glutting of markets. With this object and others in view, a meeting of the officials of different marketing organizations has been called to be held in Seattle on January 22nd, and another meeting for the same purpose in Portland on January 25th. In addition to officials from the different marketing organizations a number of representative growers are being called on to be present and take part.

Growers are doing everything in their power to make the apple business more profitable in the future than it was in 1914. They are studying efficiency and economy in the cost of production and harvesting; they are reducing expenses in every possible way; they are endeavoring to assist the industry to success by engaging in diversity to the fullest possible extent; they are working to organize by-product factories to utilize the poorer grades and save the waste; they are willing to pay a liberal amount for marketing; they are willing to spend a reasonable portion of the income for advertising; and universally they feel justified in asking for harmony among the different organizations because they firmly believe that with the right kind of harmony unnecessary competition and cutting of prices can be eliminated, and glutting of markets by irrational and unlimited consignment be prevented.

It is the belief and hope of the apple growers that if the marketing organizations will meet together in the right spirit of fair and liberal mindedness, that with their knowledge of the busi-

ness and their experience, they can devise a plan whereby the apple crop of the Northwest can be marketed in a more intelligent way than it has been marketed in the year 1914. It is the belief of the growers that the Northwestern crop of apples can be proportionately distributed and marketed with orderly control, and it is their belief that if this is done prices can be obtained that will not only pay the cost of production but will pay the grower a fair income on his investment. It

Wanted A Position

by a competent orchard man or general ranch manager. Best of reference. Address "T," care "Better Fruit," Hood River, Oregon.

Expert Horticulturist

Western experience, open for engagement as horticulturist or general manager. College man, wide practical experience. Address 1004 Congar Street, Whitewater, Wisconsin.

Superintendent

Orchard and farm, wants change. Many successful years' practical experience, together with technical learning. Larger the proposition the better. Good references. Address Box "G," care "Better Fruit."

For Rent

On favorable terms to experienced and capable orchardist, who can give good references, my 120-acre farm adjoining the city limits of Mosier, Oregon (Hood River district). Forty acres in fruit, 12 acres cleared for grain, balance uncleared and used for pasture. Address W. H. WEBER, 4319 Drexel Boulevard, Chicago, Illinois.

The SURE WAY TO SUCCESS

in fruit raising is in producing the highest percentage of high class fruit to your entire crop.
No surer way to accomplish this can be had than by the purchase of



A Hardie Hillside Triplex

Side hills and bad soil conditions don't delay its high-pressure efficient work. A closely set orchard is not injured and can be sprayed with ease. There is no machine to be compared with it. Get our catalog giving details.

The Hardie Mfg. Co. 49 North Front St. Portland, Oregon

seems reasonable also to assume that such an achievement will be satisfactory to the marketing concerns. It certainly cannot be very satisfactory to any man connected with the marketing of apples to handle the product without a profit to the producer. Therefore we believe that if the people attending these meeting will meet with a spirit of good will and fair mindedness, realizing that the grower must make a profit in order for their business to succeed, much can and will be accomplished at the meetings in Seattle and Portland.

Ferd Groner, of Hillsboro, Oregon, who has had much experience in growing walnuts and walnut trees, contributes a very interesting article about walnuts and the industry in this issue of "Better Fruit," which is worth reading. Walnuts have been grown successfully, particularly in the Willamette Valley, for a great many years. After the experimental stage had been passed it was determined that walnuts were a paying proposition. A great many orchards were set which have begun to bear during the last few years, proving that the industry is a profitable one. The walnuts grown in the Northwest are of excellent quality, the trees do well and bear well, all of which is valuable information for fruit growers, because nearly all fruit growers are seeking more or less diversity.

Soap With Arsenate of Lead Spray.—Two or three years ago a great many fruit growers in the Northwest used soap with arsenate of lead, finding that it made the lead spread very much better. This was particularly true when tobacco dip was used at the same time for aphids. It made the tobacco dip much more effective, but they found in the late spraying that the soap and arsenate of lead used alone in some instances caused more or less russetting. The Takanap Soap Company, of Germantown, Pennsylvania, are manufacturing a soap which they claim can be used with arsenate of lead without doing any burning.

More Potash Coming

American crops and soils are still as hungry for Potash as before the outbreak of the European War, which curtailed the Potash shipments.

Some of the Fertilizer Companies are trying to induce farmers to buy the one-sided low Potash or no Potash fertilizers of a generation ago. This means a fertilizer that is profitable to the manufacturer, but not the best for the farmer. When the Syndicate in 1910 started the direct sales of Potash to dealers and farmers at reasonable prices, Potash sales increased 65 per cent in one year, a clear proof that farmers know that Potash Pays. They know that Potash gives good yields, good quality and resistance to plant diseases.

Many of the Fertilizer manufacturers are willing to meet the farmer's wishes and sell him what he thinks he needs. These manufacturers are now willing to furnish as much Potash as they can secure. They offer goods with 5 per cent and even in some cases 10 per cent Potash, if the farmers insist on it.

Shipping conditions are improving, more Potash is coming forward, although the costs of production and transportation are higher. The higher price of fertilizers is not due wholly to the slightly higher cost of Potash. Much of the Potash that will be used in next spring's fertilizer had reached America before the war started.

There is no substitute for Potash.

We can no more return to the fertilizer of twenty years ago than we can return to the inefficient farm implements or unprofitable livestock of that period. [Adv.] H. A. HUSTON.

HOW TO MAKE MONEY

in California on an investment of \$1,000.00 or less. I will tell you how to double your money yearly. Send 25c for book — ALFRED MITTING, Expert Horticulturist, 8 New Street, Santa Cruz, California.

335 EGGS YEAR EACH HEN, GUARANTEED

Feeding cheap home-made stimulant. Shortening moulting. Full instruction \$1, or send 25c, stamps or coin, to cover postage on strictly free package guaranteed enough for two months' feeding your unlaying hens, fully convincing you before sending \$1.

BUY HENS—MAKE EASY MONEY

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Grasselli Arsenate of Lead Paste Grasselli Arsenate of Lead Powdered

The quality which has been standard in all fruit growing sections of the United States during the past eight years.

Grasselli Brand Sulphate of Nicotine

Guaranteed to contain 40% Nicotine.

Thrips and other plant lice can be destroyed by spraying with Grasselli Brand Sulphate of Nicotine. May be combined with Arsenate of Lead or Lime-Sulphur Solution, or both, to give a combined treatment for Plant Lice, Leaf Eating Insects and Fungous Diseases.

The Grasselli Chemical Co.

Cleveland, Ohio

St. Paul, Minnesota

ESTABLISHED 1839

Distributors in All Leading Fruit Districts

The San Jose Scale Insect

By A. L. Melander, Entomologist, Pullman, Washington

THE San Jose scale is an Asiatic insect that was introduced into California about 1870, and since that time has spread into practically every fruit-growing district of the United States. Because of the rapidity of its multiplication and because its presence is poisonous to the plant on which it lives this species is considered one of the most destructive of all insect pests.

The scale of the adult insect measures about one-fifteenth of an inch in diameter and shelters the living insect beneath. The individual scales are cir-

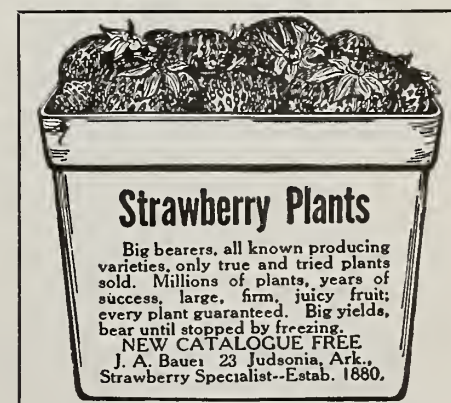
cular, flat and brownish yellow, and in the center bear a tiny darker pimple. Newly-born individuals are yellow in color and are naked, but acquire a blackish color, so that a twig infested with the scale in its various stages of development looks as if it were sprinkled over with ashes. So nearly is the insect colored like the bark that a few scales on a twig would pass unnoticed. When the insect becomes abundant, however, the bark is sometimes apt to assume a reddish or purplish color, due to the poisoning of the branches by the scale. This insect

lives also on the leaves and fruit, and usually in the case of apples, peaches, etc., causes a red ring to form in the skin of the fruit surrounding the scale.

Instead of propagating by egg production like most insects, the San Jose scale gives birth to living young. During the day of birth these minute individuals are active. They possess legs, eyes and feelers, but have no scale covering. During this day they migrate from their parents usually to locate on the newer growth. When they settle down, the waxy scale begins to form as a secretion from their backs. At the same time the insect underneath degenerates, losing its legs and feelers, and becomes virtually a helpless, hungry, minute speck of living matter. In about two weeks this insect molts and the cast shell becomes the center of the new and enlarging scale covering. The males now become oval in shape, retain their eyes and gradually grow stumps of legs and wings. The females become even more degenerate than before, their rotund body bearing little resemblance to other insects. A month to six weeks after birth, according to conditions of the weather, the life cycle is complete and the individuals attain sexual maturity. The males then emerge from their shells and immediately fertilize the sedentary females. During their brief life these males are quite active, but they are extremely delicate in their organization and easily perish. For some six weeks after mating, the females are able to produce live young at the rate of several each day. During the warm summer months the rate of reproduction reaches more than five hundred offspring to each mother. Theoretically, were all the offspring to survive, the progeny of a single

A Book You Ought to Have

IF you have not already received a copy of the wonderfully interesting book just put out by R. M. Kellogg Co., don't lay down this paper until you have sent for one. "Great Crops of Strawberries and How to Grow Them" is its suggestive title, and the book is all and more than its title conveys. Not only does it go fully into every detail of the work in such a way as to make it possible for even the novice to achieve success in this field, but it contains letters from growers who tell in a most delightful and convincing way of the pleasure and profit they have derived from their endeavors along this line. Nearly every page has beautiful illustrations which are most valuable and helpful. R. M. Kellogg Co. are specialists in strawberry plants which have made their name famous the world over. The book will be sent free to all of our readers who ask for it. Address R. M. KELLOGG CO., Box 355, Three Rivers, Michigan.



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California Spray-Chemical Co.
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111 Conkey Building, Cleveland, Ohio



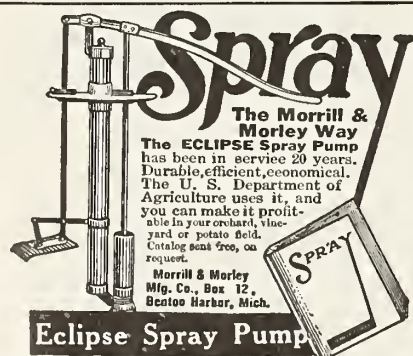
THE GENUINE SMITH STUMP PULLERS
W. SMITH GRUBBER CO.
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COMMERCIAL AND HOME CANNING OUTFITS AND EVAPORATORS

Make more money from your orchard by saving the waste. Convert your low grades and over-supply into canned and evaporated fruit, for which there is always a good demand and good prices.

If you want to learn more about this, write us. We will be pleased to furnish you descriptive matter regarding our outfits and quote you our prices.

HENNINGER & AYES MFG. CO.
47 First Street
PORTLAND, OREGON



over-wintering pair of parents would amount to several billions of individuals. This number of scales placed side by side would cover an acre of surface, and, of course, is never realized, because always there is natural death.

Continued in next issue

Removal Announcement

The Northwestern Fruit Exchange will remove its general offices to the Stuart Building, Seattle, Washington, January 16, 1915. All communications timed to arrive on or after January 18 should be addressed as follows: Mail: Northwestern Fruit Exchange, P.O. Box 1898, Seattle, Washington. Telegrams: Northwestern Fruit Exchange, Stuart Building, Seattle, Washington. Cablegrams: Norfex, Seattle (U. S. A.). This change in location is occasioned by the consolidation of the executive department, heretofore located at Seattle, and the various operating departments now located at Portland; deemed advisable because of the important expansion in the business of the Exchange, and the belief that its affiliations and its customers alike can be better served from its new location.

BARTLETT PRUNING TOOLS



are designed on scientific principles, made of the highest grade materials and sold on their merits.

We make a complete line, including our **JOINTED TREE TRIMMER**, and will be glad to send catalogue and booklet on pruning upon request.

No. 18, Pruning Saw
Price \$1.75

No. 777, Two Hand Pruner
26-in. Ash Handles, \$2.00

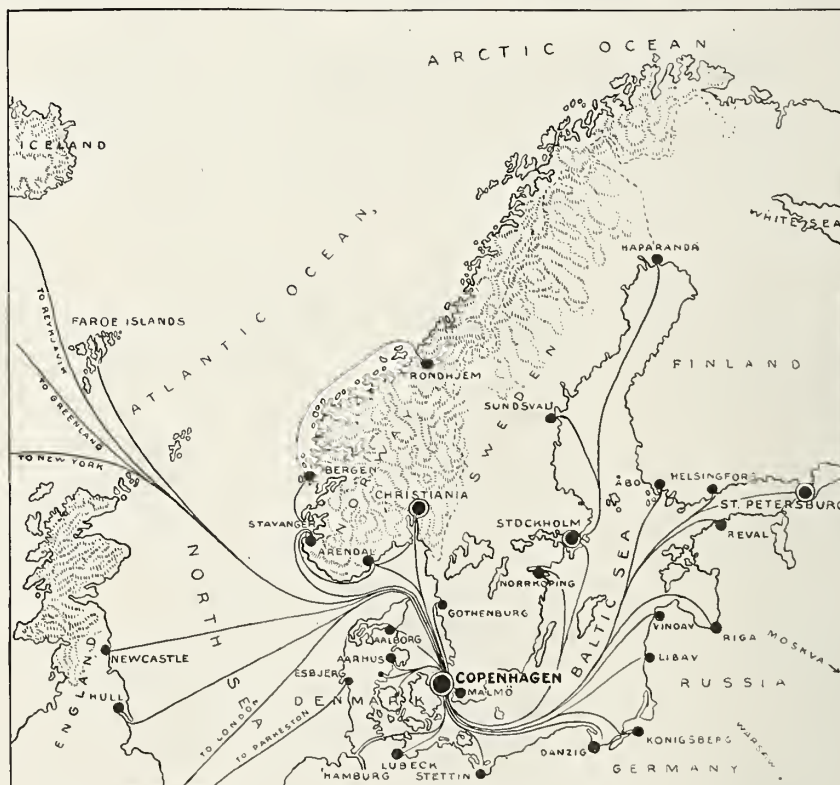
Your dealer can supply you. If he does not, mail money order to us and we will ship prepaid.



No. 18 BARTLETT MFG. CO. No. 777
Boydell Building DETROIT, MICHIGAN

Oregon Agricultural College at Corvallis, Oregon, will hold its winter short courses from January 4 to 30. Farmers' week will follow immediately, from February 1 to 6. These meetings are largely attended by farmers and fruit growers, because they have found them very instructive and valuable. Therefore we feel justified in saying that every fruit grower and farmer who can possibly arrange matters to take one of these courses will be mighty well repaid for so doing.

Scandinavia and the Baltic Market



We have a good outlet in the markets shown on above map. We handle apples only on a consignment basis. All consignments have our personal attention. Have you anything to offer? Do not fail to write or cable us.

ERNST C. LOHSE & CO. S EFT., Copenhagen
Cable Address: ERNST LOHSE **Fruit and Produce Agents**

THE BEAN GIANT

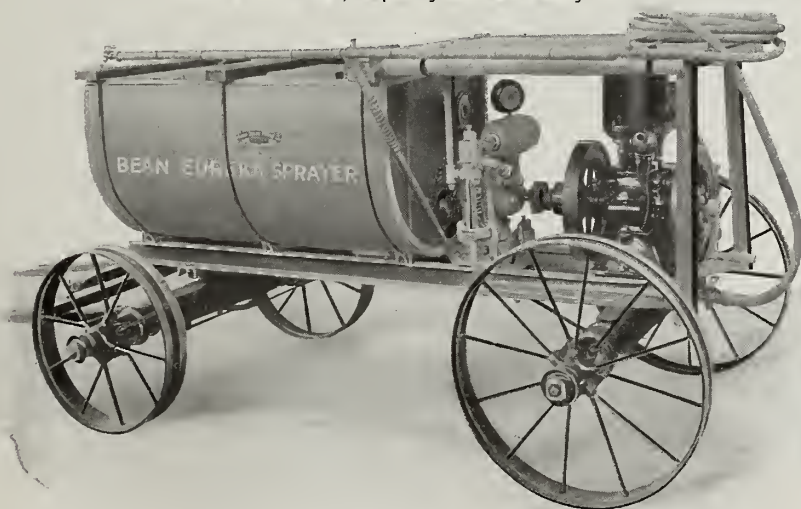
The Leader of the Bean Line

Bean Power Sprayers

For downright dependability—simplicity of operation—ease of handling—effective high pressure work—convenience—durability—and all round satisfaction—the Bean is in a class by itself. Made in various sizes and capacities—and **BEAN QUALITY** has been built into them all. Illustrated below are two of our popular rigs.



THE BEAN GIANT
A Marvel of Power, Capacity and Efficiency



THE BEAN EUREKA
A Dandy Little One-Man Power Rig

The Bean Giant

The Leader of the Bean Line

Among many distinctive features, we call your special attention to the following:

NOVO ENGINE—the best sprayer engine on the market. Light, strong, powerful, certain in operation, and economical of fuel.

BEAN POWER PUMP—the result of years of study and experiment. They possess many patented and protected features.

PORCELAIN-LINED CYLINDERS—which never wear out, contain no stuffing box, and cannot be injured by acids or spray materials.

VALVES—non-corrosive, cannot stick or clog up.

ROTARY AGITATOR—which keeps the material perfectly agitated.

ROCKING BOLSTER—on front axle, so that tank always remains level.

UNDERNEATH SUCTION—which makes replacing of cracked hose unnecessary and does away with priming.

BEAN PRESSURE REGULATOR—which saves fuel, saves wear and tear on engine and pump, ends regulator troubles, and saves time, money and temper.

For complete description of the Bean Giant Triplex and Bean Giant Duplex read 14 to 21 in our Catalog 28-A.

The Bean Eureka

A One-Man Power Sprayer

This is the first season that you have been offered Bean quality in a small, low-priced power outfit. This is a one-man rig. One horse can haul it without trouble. Supplies one line of hose at high pressure and will cover from two to three acres a day. **BEAN QUALITY** through and through, with the many distinctive features that have made Bean power sprayers the recognized leaders throughout the fruit-growing world.

Equipped with Novo Engine, Special Power Pump, Pressure Regulator, 100-gallon Redwood Tank, Rotary Agitator, Truck, Canvas Cover and Curtains, Bean High Pressure Spray Hose, Rod, and Complete Set of Tools and Accessories—all ready to begin work.

For the grower with a comparatively small acreage—the Bean Eureka is just the rig.

Furnished, also, without tank and truck—for the operator to mount on his own wagon. Write for wonderfully low price.

**Sign and Mail this Coupon Now for
Our Complete Sprayer Catalog**

It illustrates and describes the entire Bean line of Hand and Power Sprayers. It explains the many distinctive Bean features and tells you many things you should know before you invest in a sprayer.

BEAN SPRAY PUMPS are built complete in our own factory, with the exception of the Novo engine—and who can build a better sprayer engine than the Novo? Every outfit is carefully tested before it leaves our plant—and is guaranteed to do good work—and to continue to do good work—when it reaches the grower. Our factory representatives visit all fruit sections regularly and are always ready to lend a helping hand to any Bean operator.

BEAN SPRAY PUMP CO.

213 West Julian Street

San Jose, California

12 Hosmer Street, Lansing, Michigan

DELIVERIES MADE FROM PORTLAND AND OTHER NORTHWEST POINTS



CUT OR TEAR COUPON ALONG THIS LINE. SIGN AND SEND TO US
BEAN SPRAY PUMP CO., San Jose, California.
213 W. Julian St., San Jose, California.
Gentlemen: Please send me a copy of your Catalog
28-A. I am specially interested in
Bean Giant
Bean Eureka
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CROCKERY

Quickly Made
Clean and
Bright
by the
Use of



Large
Sifter Can,
with Full
Directions, 10c



"Sprayed 16,000 Trees—No Repairs"

—so says one of our thousands of satisfied customers, Mr. J. A. Bingaman, Pillow, Pa. He did the work with a Goulds "Pomona" Sprayer, shown below. This two-hose, four-nozzle sprayer can't be beaten for use in small orchards, and where labor is cheap, is used in large orchards—several machines taking the place of a large power outfit. Wearing parts are of solid bronze. Large steel air chamber gives uniform pressure. Easily adjusted and cleaned. Fits any barrel. It's only one of 50 styles and sizes of hand, barrel and power sprayers, made at the largest pump works in the country.

**GOULDS
RELIABLE
SPRAYERS**

are guaranteed; backed by 65 years' pump-making experience. Write our nearest office for valuable 44-page book, "How To Spray." It is free. Send for your copy today.

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Growers Grip By-Products Problem

UPON the ten men named at the by-products convention held in Spokane in connection with the National Apple Show as the central by-products board will devolve the forming of central by-products organization, along the general lines recommended by the original by-products committee in its report. Their duties will be even more extensive than the formation of the by-products organization, as they are instructed by the congress to take such methods as they may find practical in

bringing the existing fresh fruit selling agencies into more harmonious action to eliminate cut-throat selling competition.

H. C. Sampson, as chairman of the former committee, was delegated to issue a call for the first meeting of the new central board, as no chairman has yet been named. The meeting for organization and the general outlining of the work will be held at the North Yakima Commercial Club Saturday morning, December 5, at 9 o'clock. The

joint committee, consisting of the original by-products committee, its auxiliary committee and representatives of the fresh fruit selling agencies, brought in its report, which was read by Secretary J. F. Batchelder and adopted without comment.

The report of the committee was as follows: "Resolved, That we recommend to the by-products convention that a board of ten be appointed, representing the different fruit producing districts of the Northwest, with power to act in the formation of a by-products organization along the general lines recommended by the by-products committee, including such effort as they may find practical to bring the present fresh fruit selling agencies into more harmonious action, and to take such additional action as the board may deem wise. Resolved, That as soon as possible the permanent representative of each district be referred to the growers and by-products institutions of each district in such a manner as the board shall desire. Resolved, That the new board be selected by a committee consisting of H. C. Sampson, W. H. Paulhamus and F. E. Sickels."

In the selections the committee has selected bankers, growers and practical by-products men now in charge of plants. H. M. Sloan is an orchard owner and president of the Bitter Root Irrigation Company. Paul A. Weyrauch is manager of the Blalock Fruit Company of Walla Walla. Conrad Rose is head of the Wenatchee Produce Company, a successful grower and one of the largest individual shippers of fruit in the Northwest. Alexander Miller is vice-president of the First National Bank of North Yakima and owner of the Miller Block in that city. W. H. Paulhamus of Puyallup is president and manager of the Puyallup and Sumner Fruitgrowers' Association, operating the largest and most successful co-

Cutaway (CLARK)

BUSH AND BOG PLOW

does work no other machine can do. It cuts down bushes, demolishes bogs, and does all kinds of hard plowing and disking. It is big and strong and withstands terrific strain. Ask your dealer about it. If he doesn't sell CUTAWAY (CLARK) implements, write us at once for free catalog. There are no substitutes.

THE CUTAWAY HARROW COMPANY
Maker of the original CLARK disk harrows and plows
940 MAIN STREET HIGGANUM, CONN.



operative by-products plant in the Northwest. Truman Butler is vice-president and manager of the Butler Banking Company of Hood River, Oregon. D. A. Snyder is a banker and the proprietor of a successful private evaporating plant and cannery at Dayton, Oregon. J. H. Holt is manager of the Eugene Co-operative Cannery at Eugene, Oregon. M. J. Higley is manager of the Southern Idaho sub-central of the North Pacific Fruit Distributors.

The by-products meeting brought out the largest attendance of any of the fruit congresses, close to 500 prominent growers, by-products men and scientific experts being present. A feature was the number of women and several of these participated in the discussions. The papers on topics relating to home canning, read while the committee was deliberating, proved of special interest and the speakers were called upon to answer many questions.

Professor C. C. Vincent of the University of Idaho, Moscow, told of experiences with a home-canning plant for three years. The investigations show that eight persons can handle 370 cans of peas in a day, while five persons can handle 330 cans of tomatoes. A day's work for one person with a home-canning plant is as follows: Peas, 120 pounds; beans, 80 pounds; tomatoes, 370 pounds; peaches, 340 pounds; apricots, 220 pounds; pie cherries, 20 gallons; flesh-colored cherries, 450 pounds; raspberries, 60 crates; strawberries, 10 crates. The cost of producing canned stuff is as follows per case: Peas, \$1.89; beans, \$1.57; tomatoes, \$1.73; corn, \$1.91; peaches, \$1.86; apricots, \$2.21; raspberries, \$1.64; dewberries, \$1.61; loganberries, \$1.66, and Royal Ann cherries, \$2.12. The total average cost was \$1.73 a case, while the wholesale price was \$2.20. The average profit was \$114 per acre.

J. R. Shinn, agriculturist for Spokane County, spoke on the value of apple pomace as a food for dairy cows. He submitted tables showing that its food value was practically the same as corn silage when fed fresh. It can be kept fresh in ordinary silos.

T. J. Newbill of the Department of Agriculture submitted a number of working specimens of home-canning plants used in boys and girls' club work, and told what some children were accomplishing with similar plants. He lauded the work of the Spokane County Agriculturist in starting boys' apple clubs and gave the state credit for having started the first club for children in the United States.

J. H. Morton of Portland read a technical paper on the construction and operation of an evaporating plant. He showed drawings of a model two-tunnel drier. His paper brought out many questions.

H. C. Gore of the Fruit and Vegetable Utilization Laboratory of the Department of Agriculture spoke on the new apple by-products, condensed cider and cider syrup. Samples were shown and the method of making explained. For condensed cider a tank of cider is frozen solid, the chunk of cider ice broken

3

SHERWIN-WILLIAMS Spraying Products

Now put up in Dry Form for Convenient Handling and Effective Spraying

You can now get 3 S-W Insecticides and Fungicides in a dry powdered form—easy to ship—light—no danger of freezing, drying out or spoiling. Also improved in many chemical ways.

S-W Dry Powdered Arsenate of Lead
Dry powdered form gives maximum killing power at minimum expense.

S-W Dry Powdered Tuber Tonic
A three-in-one potato spray that kills leaf eating insects, prevents blight and acts as tonic to the plant.

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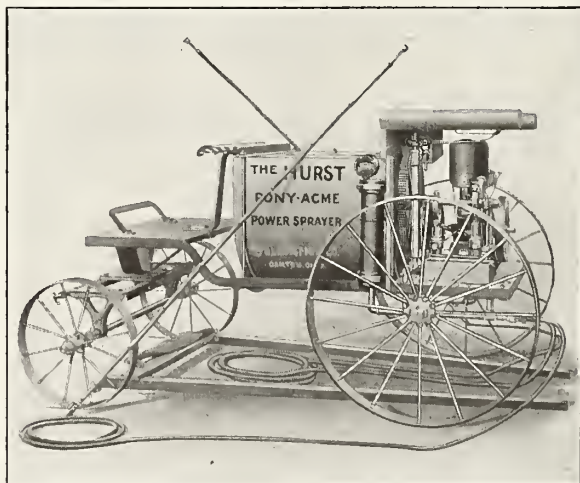
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up in a crusher and the mass put through a centrifugal machine, from which the condensed cider is extracted. He declared the commodity did not compete with the apple in any way.

One barrel of condensed cider will make five barrels of cider by merely adding water. It requires no preservative and cuts the costs of freight transportation and cooperage for barrels. In making cider syrup a filter press is necessary, and Mr. Gore stated that the government was not through with its experiments, as the proper clarity had not been attained. In response to a query from R. E. Strahorn he stated that the syrup could not be reduced to sugar, as it failed to crystallize. He complimented Seiter Brothers of Moran Prairie on their product, which he said was superior to the government product. A. J. Seiter stated that his product was the result of ten years of experiment.

H. C. Sampson, chairman of the by-products committee, submitted the committee's report of its investigations of the last twelve months. He reported a total fruit acreage in the Northwest of 605,000 acres, which would produce ultimately 150,000 cars of fruit, of which the railroads could furnish refrigerator car service for about 30,000 cars and 20,000 cars could be stored in the Northwest, leaving a total of 100,000 cars to be cared for in by-products plants. In 1914, according to the report, of 12,000 cars of apples in the Northwest, 5,050 cars were combined "C" grade and five-tier fruit not large enough or good enough to be wisely salable.

"Growers must adjust their ideas away from the basis of the high prices of a few years ago to a basis of modest profit on carefully tended, economically managed orchards," said Mr. Sampson. "The vital factor is the conservation of high-grade fruit and the assurance of a reasonable price for green fruit. Montana does not have a single cannery or evaporator within her territory. Nevertheless, during 1913 Montana imported 60,000 cases of canned fruit, 70 per cent of which was peaches and pears. She imported 40 cars of apple-cider vinegar and 20 cars of sweet cider. She imported 125,000 cases of tomatoes, 75,000 corn, 60,000 peas and 25,000 beans, or a total of 285,000 cases of canned vegetables. No figures are obtainable as to her importations of dried and evaporated fruits and vegetables. Idaho in 1913 shipped out 175 tons of dried apples, 50 of dried prunes, 75 of other dried fruits, 25 of canned berries, 100 of canned peaches, 25 of canned rhubarb and 50 of beans, but during that same year the same state imported 185 tons of dried apples, 75 of dried prunes, 150 of dried peaches, 100 of other dried fruits and 950 of canned fruits and vegetables. Her imports were a total of 96 tons greater than her total exports.

"Our present needs in the four states, as shown by excess of imports over exports; the natural heavy increase of by-products consumption, as shown by

the report of the committee, and the success of the State of California, all indicate a large output possible from the Northwest at fair prices for our own manufactured products. Through the co-operation of our own railroads, wholesalers, retailers and buying-at-home leagues; by the stimulation of lumber-camp trade, and with our present home and Alaskan needs, surely we can increase our consumption materially in our own home territory. The committee finds a number of surprising things. Much fruit goes to waste in many Northwestern towns and cities, and the same variety of fruit, canned or evaporated in California, is found on the merchant's shelves in these same villages. Annually California imports great quantities of Royal Ann cherries for maraschinos, imports hundreds of tons of Oregon pears and exports back to this country and the Canadian territory this same fruit. Some districts let hundreds of tons of apples go to waste and import every pint of vinegar they use.

"Corn canned in the West is shipped to the East and returned under Eastern labels. Vinegar of the West is shipped in barrels to the East, put into cases, returned to the Northwest and sold at four times the price it was bought for. And all these products are from our own home states, but bear a foreign label, thus losing to us the advertising value. California supplies the dried and canned fruit largely for our own states and the territory north of us. She uses thousands of tons of peach seeds, the kernels being processed and sold as "bitter almonds" or shipped to Germany and there used for the manufacture of prussic acid. The committee is unanimous in its conclusion that a central by-products organization is necessary for the salvation of our fruit and vegetable industry. Therefore, the committee unanimously agreed to call this convention today for the purpose of forming a central by-products organization whose functions, the committee recommends, shall be: First, to act in an advisory capacity to all districts contemplating establishing plants and to employ experts whose services are to be paid for by such districts. Second, to arrange for a central selling agency for the handling of by-products."

In discussing the report M. M. Higley of Payette, Idaho, declared Southern Idaho was convinced that definite action at the present meeting was urgent. He said the growers and the commercial clubs of that portion of the Northwest were heart and soul in the movement. Failures in plants, he said, were generally due to inadequate information and immature judgment, two things a central organization could furnish all the districts.

George Tinker of Corvallis, Oregon, declared an organization was not wanted by the growers unless it could be made co-operative like the North Pacific Fruit Distributors.

W. H. Paulhamus of Puyallup declared he was heartily in sympathy with any movement that would better

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10-pound Can **\$10.75**

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the condition of the man on the farm, but added that no business was worth while that did not show profits. The great trouble is the lack of money to do anything," he said, "and the financing of the by-products industry will take hundreds of thousands of dollars. Where are you going to get it? There isn't a banker in the country who will finance a plant that merely depends on the bad fruit somebody can't sell. Let the people who handle the good fruit handle the bad fruit as well. Make the good apples take care of the poor ones. In our organization the by-products business is heavier than the fresh fruit, but we make the fresh-fruit money finance the by-products. Is this thing for the individual or for the people? If the growers haven't enough energy to take care of themselves an individual is better than nothing. There are six men in the Northwest that ought to be shut in a room inside a high iron fence and made to get together before being let out. I mean H. M. Gilbert of Toppenish, E. E. Sampson of North Yakima, Conrad Rose and W. T. Clark of Wenatchee, J. H. Robbins of Spokane and T. F. Gwinn of Portland. These men, through the organization they represent, handle approximately 90 per cent of the Northwest fruit production. Don't let them quarrel about who is going to be president," continued Mr. Paulhamus. "They can get together and form the best by-products organization on earth. Form these selling agencies in one or two organizations—two are much better than 100—and stop this loss to growers by cutting prices. There are too many sellers and the system is absolutely wrong. There is a market for all our stuff if we go at it in a reasonable way. Conditions are growing worse every year and the cut-throat policy must stop."

F. E. Sickels of North Yakima declared there was no room for argument concerning the need of a central by-products organization. He favored a co-operative organization and stated that the by-products organization and the fresh-fruit organization should work harmoniously and be practically one.

Orris Dorman of Spokane moved the adoption of the committee's report, with the recommendation of Mr. Paulhamus added. Mr. Sickels seconded the motion and the report was adopted.

The conference resolved itself into a convention at this juncture and H. C. Sampson, chairman, and J. F. Bathelder of Portland, secretary, were made permanent officers.

A warm discussion followed the motion of Mr. Dorman that the present committee be augmented by the men named by Mr. Paulhamus, to prepare some plan of action. This motion was finally carried in amended form, the name of H. F. Davidson, president of the distributors, being added as a permanent member, and R. B. Parsons of the Northwest Fruit Exchange was named to act for Mr. Gwinn, who was not in attendance. For the same reason Mr. Sickels was named to act temporarily for Mr. Davidson.

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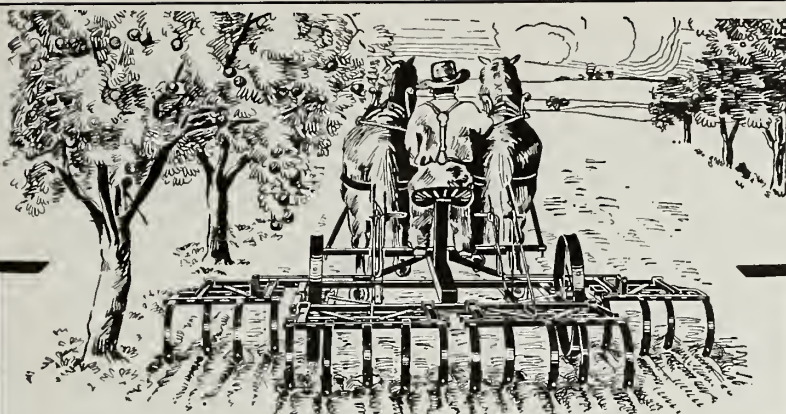
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Evaporated Loganberries

By H. S. Gile, Salem, Oregon

MANY producers of loganberries fear that the time has about arrived when they will be compelled to destroy their plantings because of insufficient demand to keep pace with the rapidly-expanding production. While this fruit in the Willamette Valley is a tremendous producer, it must not be forgotten that the grower must get as much as three cents per pound for his fresh fruit in order to receive any reasonable return upon his investment. From this viewpoint this writer would like to point out some of the merits of the loganberry when evaporated. In the years to come we may expect the canners to take liberal quantities whenever they can purchase them as low as two and one-half cents per pound, which is about the price they usually pay for Evergreen blackberries for the manufacture of gallon pie fruit. There

will also probably be an increasing outlet through the shipment of fresh loganberries, especially in seasons when weather conditions are favorable and as the shippers understand better the problems affecting their safe transportation, and, lastly, there will without doubt be one or more buyers in the field hereafter in the interest of loganberry juice manufacturers, as there can now be little doubt that as a non-alcoholic beverage loganberry juice excels anything on the market, and here is a very large field which offers itself for development, but upon the question of a general market for the evaporated fruit at a reasonable price depends in a very large measure the entire future of the industry. If the grower may always have the consciousness that if all the other avenues fail to provide him a profitable outlet for his product

he still has recourse to evaporation with certainty of profit, then nothing from the market side of the question can prevent loganberry growing from taking a high place in the diversified list of Oregon's important products.

If, as some contend, our hop industry in Oregon is ruined because the people have declared against the saloon, why may not loganberry culture more than take its place? As a distributor of money per acre for labor to the men, women and children of Oregon it would certainly equal hops.

It requires from five and one-half to six pounds of fresh loganberries to make a pound of evaporated fruit. The commercial charge at present for evaporating loganberries is three cents per dried fruit pound. From this it is readily seen that the wholesale carload price per pound f.o.b. on this Coast must range as a minimum right around twenty cents, with a higher graduated scale for cartons and small packages, but even at this price there would not appear to be any good reason why the consumer in any part of the United States should be required to pay more than thirty-five cents per pound for the best evaporated loganberries. At first thought this may seem to be expensive fruit, but it can readily be proven that at this price evaporated loganberries are about the most economical of all cured fruits, and not only so but it has recently been demonstrated that the peculiar, strong, rank flavor possessed by the fresh fruit (disliked by many persons) is entirely overcome by the recently-discovered process of preparing the evaporated fruit for the market. Furthermore, in the process of evaporation a very large per cent of the fruit juices are reduced to sugars, and this explains why jelly, pie and jam made from the evaporated fruit possesses a flavor superior to that made from the fresh fruit, and not only so but better results are secured with a less quantity of sugar.

The writer believes that the American consuming public only needs to be informed concerning the convenience, economy and splendid merit of the new process evaporated loganberries to bring them into general consumptive demand, and when they are once well known no other evaporated fruit—except prunes—will have a wider sale or be more generally used. For example, with what cured fruit can you get so good results at so small cost and trouble as the following, and this is only one of many suggestions which we might make: Take one-half pound of evaporated loganberries, place them in a porcelain vessel, add three teacups cold water and soak overnight. Then drain off the pure juice. There should be two or more teacups. Then add to the soaked fruit one teacup of cold water, one heaping teacup of sugar and mash with a potato masher. This will give you two pounds of choice pure fruit jam without any cooking. You can then take the pure juice which you have saved and use it

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for making jelly, pies or many other things which the good housewife will think of. If desired, the uncooked loganberry jam can be used for making pie filling, and will make at least three good, big pies, while the juice which you have saved should make ten or twelve ounces of delicious jelly.

We should like to prove to any of the readers of this journal that there is reason in our contention and we will, if desired, mail to any postoffice in the United States a sample one-pound package of new process evaporated loganberries for thirty-five cents, together with a booklet of recipes. We should like to have Oregon growers of loganberries and producers of other fruits make their own test and comparison of flavor and cost with the loganberry preserves, jams, jellies, etc., which they have already prepared during the season from the fresh fruit.

The Rosy-Apple Aphis

Measured by its immediate effects, the rosy-apple aphis is the most dangerous of the plant lice. The unchecked presence of this species in the spring of the year results in a worthless crop of stunted and gnarled fruit at harvest time. The species is increasingly prevalent in the irrigated orchards of the Northwest, and already many millions of boxes of fruit have been destroyed through its working. Fortunate it is that control of the species is easy if undertaken in time.

Unlike the common but less dangerous green aphis of the apple, rosy-apple aphis neglects the new growth to work in and about the blossom clusters. The over-wintering eggs hatch just as the buds are opening, about March first, producing powdery, bluish-green lice. These aphids work down into the developing leaves, poisoning them and the future fruit, and later give birth to lice which finally become pinkish in color. In June blackish winged individuals appear to fly from the apple trees, which then are free of aphids until the return migration in the fall. In the meantime the poisoned apples grow but little, but ripen early as dwarfed, irregular, tasteless caricatures of fruit, hanging onto the branches to testify to the destructiveness of the insect.

The customary sulphur-lime spraying as given in March fails to destroy both the eggs and the hatched young of this aphis. To become effective against plant lice this spray should contain tobacco, as in the form of black-leaf "40," one part to nine hundred. Recent experience in California warrants the recommendation of fall spraying with weak oil emulsions as the most dependable treatment. The winter eggs are not laid for several weeks after the fall migrants return to the apple trees, and in the meantime the insects are susceptible to a weak spray and are easily reached. For such spraying a four-per-cent emulsion of crude oil, or a one-to-one-thousand



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Whiter, Lighter Bread

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"SCALECIDE"

—the spray that's endorsed the country over as "The one great dormant spray." Mixed 1 to 15, it kills every scale it reaches or you get your money back. Guarantee with every package. It's easily prepared, non-corrosive and non-clogging. 1 bbl. equals 3 bbls. lime sulphur. Destroys eggs, larvae and fungi in dormant state. Simple, safe, economical. Send for free booklet, "Scalecide, the Tree Saver." Write today, to Dept. D

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Apples, Pears, Navel Oranges

black-leaf "40" spray would answer. In the latter case four pounds of soap should be added to every hundred gallons of the spray.—A. L. Melander, Entomologist.

Dishonest Grading Criticised

The application of a little ordinary common sense in the drafting of grade and pack rules and a little common honor and ordinary decency on the part of the growers in observing them was urged at the Fruitgrowers' Congress, in connection with the National Apple Show at Spokane, by F. E. Sickels of North Yakima, manager of the Yakima Valley Fruitgrowers' Association. Mr. Sickels scathingly arraigned what he branded as the "unholy alliance" between certain types of shippers and growers in an address on "Grading and Packing." "Our organization never turned down a lot of apples, no matter how scabby, wormy and off grade, that some person was not found by the grower to ship them out as extra fancy fruit," declared Mr. Sickels. "There is always some buyer for the junk. The grower who packs the off-grade stuff is advertising one thing and selling another. With some it seems to be a case of how poor a grade can get by the inspector as extra fancy. That grower is not building up an industry; he is tearing it down. He is not creating new markets; he is destroying the ones already existing. Many shippers figure that there is a 'sucker' born every minute, and they are after the 'suckers.' When these are gone they will go out of business. The growers connive at the fraud being perpetrated by furnishing bait for the fishing. Growers fail to realize that if 10 per cent of the fruit in a car is off grade the whole car will be dragged down in price twenty cents a box."

Mr. Sickels urged growers to keep up size, color and grade and pack, strictly in keeping with the most rigid grade and pack rules, and he concluded with the following slogan suggestion: "If you see one apple you see the box. If you see one box you see the car."—Exchange.

Retail Prices of Apples Compared With Other Commodities.—Retail profits on clothing vary all the way from 25 to 50 per cent; profits of the retail grocer average 20 per cent; profits on tobacco vary on different brands and different qualities probably from 25 to 50 per cent. It may be generally stated that retail profits as a rule vary from 25 to 50 per cent. The retail fruit dealer makes all the way from 100 per cent up. In fact, many instances are known where apples have retailed frequently at from 300 to 500 per cent profit. This fall the editor was advised that in Connecticut, in a small town where apples are quite plentiful, they were being retailed in small sizes at 30 cents per dozen, which would be about \$3.50 per box. In all probability the retailer, for the size and variety and grade, did not pay a price to exceed \$1.50.

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"Better Fruit" offers to its readers one of the finest lists of clubbing offers ever placed before the public. These rates do not apply to Canada, owing to extra postage.

Review of Reviews.....	\$3.00
Everybody's	1.50
Better Fruit	1.00
Total	\$5.50
All for	3.60

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Total	\$7.00
All for	5.25

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Woman's Home Companion.....	\$1.50
World's Work	3.00
Better Fruit	1.00
Total	\$5.50
All for	3.95

Fruit and Produce Distributor....	\$2.00
Better Fruit	1.00
Total	\$3.00
Both for	2.00

Delineator	\$1.50
Everybody's	1.50
Better Fruit	1.00
Total	\$4.00
All for	3.10

Harper's Magazine	\$4.00
Good Housekeeping	1.50
Better Fruit	1.00
Total	\$6.50
All for	5.45

Gleanings in Bee Culture.....	\$1.00
Good Housekeeping	1.50
Better Fruit	1.00
Total	\$3.50
All for	2.65

Ladies' World	\$1.00
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Pictorial Review	1.00
Better Fruit	1.00
Total	\$4.00
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Today's	\$0.50
Ladies' World	1.00
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Better Fruit	1.00
Total	\$3.00
All for	2.00

Pacific Homestead	\$1.00
American	1.50
Better Fruit	1.00
Total	\$3.50
All for	2.50

Northwest Poultry Journal.....	\$0.50
Good Housekeeping	1.50
Everybody's	1.50
Better Fruit	1.00
Total	\$4.50
All for	3.60

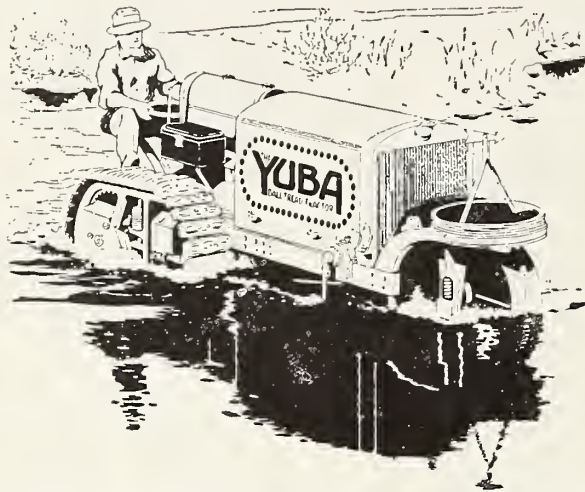
Oregon Agriculturist	\$1.00
Northwest Poultry Journal.....	.50
Better Fruit	1.00
Total	\$2.50
All for	1.85

Hoard's Dairyman	\$2.00
Woman's Home Companion.....	1.50
Better Fruit	1.00
Total	\$4.50
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Western Farmer	\$1.00
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American Bee Journal	1.00
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Commercial Walnut Growing in the United States

By Ferd Groner, Hillsboro, Oregon

THE growing of walnuts for commercial purposes is gradually receiving more attention each year as the different localities prove their adaptability for their production on a paying basis. Not much has been done in the East, but a few varieties have been planted in a limited way in certain localities; one near Lake Ontario in Western New York, and another near Lancaster, Pennsylvania, and a few scattered over Maryland, Virginia and some of the Southeastern States, but the greatest increase is in Middle and Northern California, Western Oregon and Washington between the Cascades and Coast ranges, and a few in Eastern Washington, Oregon, Idaho and Utah.

In my opinion the most favorable localities for raising high-grade walnuts are in Western California, north of the Tahachapi Mountains, in Western Oregon and Southwestern Washington. The districts in Southern California from which most of our walnuts are received are scarcely holding their own, and I think the area is gradually decreasing. Nearly all of the trees are

seedlings, and owing to the uniformity of production and quality, and the damage suffered by blight or excessive hot weather that sometimes almost destroy the crop, has made them less profitable than citrus fruit. During the last few years the high price of land and added cost of irrigation makes this district less attractive to the investor who estimates returns on his capital. It is a well-established fact that any locality where the temperature rises above 100 degrees in the shade for any considerable length of time that it is impossible to grow a first-class walnut.

While walnuts will not stand the rigor of some of the Eastern States, they will stand the cold when dormant better than excessive heat in summer; for this reason we find only a limited area of the United States suitable for profitable walnut growing. The Coast counties within 100 miles of San Francisco, and especially Santa Clara Valley, seems to be the most favorable locality in California for growing high-grade walnuts; and quite a number of new orchards are being

planted in this district and a very high-grade of walnut is being put on the market from this locality, which will gain favor as they become better known. Though land values are lower here than in Southern California, they are considerably higher than in Western Oregon and Washington, that produce equally as good nuts.

The public is beginning to realize the difference in the quality of nuts, and last season they sold at from 10 to 30 cents per pound. The investor or planter should take this into consideration, as it is of as much importance as the number of pounds an orchard will produce. Walnuts thrive best on well-drained clay or loam soil. Heavy clay seems to be best adapted if not too dense or underlaid with hardpan. The black loams are good if not too light or sandy, and if drained four or more feet deep. Rolling or foothill land, up a little from the level valley, is most favorable, as such locations are less liable to frosts in spring and fall. High hills or bleak places should be avoided, as walnuts like a reasonable warmth in summer.

The question of how far apart to plant has been much argued, and plantings are usually set from 30 to 60 feet, with 40 and 50 feet most favored. I favor 40 feet apart after several years of careful study, as the wider plantings bring too little income while the orchard is young. As planting 30 feet apart gives four times as many trees as 60 feet, the close planting might be fairly profitable, while the wide planting was yet an expense. The heaviest bearing orchard I know of in the United States is seventeen years old and set only 30 feet apart. And I doubt the advisability of planting over 40 feet. I do not advise fillers of any kind, or of planting seedling trees, though grafted trees cost several times as much, as I estimate the grafted ones of the same varieties will bring twice as much income. I would advise planting the grafted trees in the field, and not plant nuts as some advocate, and graft the trees without moving them. I have had experience in grafting over 100 acres in the field form during the last four years, doing all the work myself; some of them I grafted three and four times, and then dug the stumps and planted grafted trees in their places after losing five years of growth on one-sixth of the trees. It is easy to estimate that this loss was several times the cost of grafted trees; besides it cost me considerable more to graft them in the field. I don't believe the field-

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grafted tree is any better than the transplanted tree, as I can point to at least two instances where trees have been moved twice that are better trees than those that were not moved at all near them. This old-time hobby that the cutting of the tap root of a walnut tree is vital to the growth and bearing quality is absolutely without foundation and cannot be proven. The only way to do field grafting is to wait until the trees are from five to seven years old and then top-work them, but this increases the expense greatly and sets back the age they will begin to bear.

A word about top-working will not be out of place here. We have top-worked trees from four inches in diameter to thirty-six inches in diameter and find no trouble in getting from 85 to 95 per cent of the grafts to grow (while nursery averages only about 20 per cent) by using the Payne system, setting the scions in a split through the heart, after cutting them off at diameters of from 2 to 4 inches, $2\frac{1}{2}$ to $3\frac{3}{4}$ preferred, as the larger ones take too long to heal over, and we cannot get as good a per cent to grow in the smaller ones. Most any of the blacks or seedlings, besides the butternuts, can be successfully grafted to our commercial walnuts. There is a large field for this work, as there are thousands of black and worthless seedlings scattered over Western Washington, Oregon and California that would bear good incomes if grafted to varieties adapted to their localities. Trees top-worked five years ago last fall bore 50 to 125 pounds of fine nuts. I do not consider the system used by Mr. Neff of Anaheim, California, a success, as the branches are cut off at from 4 to 6 inches in diameter and splits made at an angle, setting several scions around the stub; fair success has been had in getting the scions to grow, but the wound is too large to heal over and decay causes the grafts, after several years' growth, to break or split off. I took note of this in Mr. Neff's own orchard.

To describe the different varieties of walnuts grown on the Pacific Coast would take almost a volume itself to do it justice, but will say that most of the varieties grown in Southern California are not adapted to Middle and Northern California, and most of the varieties in Middle California are not adapted to Oregon and Washington. Something that I cannot understand is that the Meylan walnut, that ripens and grows successfully here in Oregon, will not ripen in Southern California; and the Franquette is a practical failure from the same cause, while it is the leading nut in the Northwest and Central California. Santa Barbara soft shell seems to be the leading variety in Southern California. The Eureka is gaining favor with many. The Franquette is by far the favorite in Central California. While the Eureka has its advocates, some of the leading authorities advise caution in planting it, as it has not been fully tried out yet. The Franquette is also the leading variety in the

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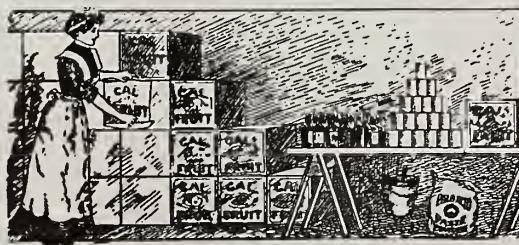
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Northwest. This variety has been bearing here for the last five years on a number of large top-worked trees without a failure, and the quality cannot be excelled. I have eight other varieties, but if I were to plant more walnuts I would plant 95 per cent Franquettes. The Meylan and Gladys are good bearers, but I will not recommend them; I am not satisfied with the Mayette, as it has been a shy bearer with us and it not as good a nut as the Franquette, though I found a seedling near Vancouver, Washington, that bore heavy crops of nuts of large size and fine appearance, but the quality was not equal to the Franquette.

The question of bringing the young orchard into bearing at the least possible expense is worth considering. By cultivating clean along the rows from one-third to one-half of the ground, the rest can be used for crops such as peas, vetches, pumpkins, corn, kale or turnips, and possibly a crop or two of potatoes might be raised, but they rob the soil of potash which would bring more money in nuts at a later date. By handling this crop to an advantage with general farming, more than the expense of cultivation can be secured. The cropping should cease at six or seven years, as it will not pay to give the orchard poor cultivation or crowd the trees with other crops, as I estimate that an orchard of first-class grafted trees of the right variety, properly care for, will increase in value at the rate of \$50.00 per acre per year for the first ten years. I find very few walnut orchards kept in perfect condition, and it is an easy matter to lose a year's growth by poor cultivation.

The question of how much income a walnut orchard will bring is the most important one, and it is to this I have given the most study. In Southern California we find the highest production per acre, about one ton, with an average of less than one-half ton. The Vrooman Franquette orchard near Santa Rosa, from 12 to 16 years old, averaged about 800 pounds, set 50 feet apart; had this orchard been set 40 feet apart its yield would have been increased 50 per cent at the above ages. F. S. Leebe & Sons have a large orchard near San Jose that has been well cared for, now coming into bearing. They are mostly Vrooman Franquette. George C. Payne, who has done valuable work in developing the walnut industry of Central California, is also located near San Jose. He has the largest and best bearing tree I have yet found, producing as high as 714 pounds of nuts; six of such trees would practically cover an acre. This tree is 38 or 39 years old. There are no grafted orchards in this locality old enough to prove just what can be produced, but I consider this district quite promising.

In the Northwest we have a few seedling groves that are making a good showing; one of these 55 trees, averaging 17 years old, set 30 feet apart, on 1½ acres, last year produced 3,700 pounds of nuts that sold for an average of 19½ cents per pound, bringing

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\$729. This is the highest producing orchard I have found, and also the highest price received for seedling nuts, showing that the Northwest can raise quantity and quality. This orchard was brought up to this high production by digging out any tree that did not come up to the owner's ideal and replacing it with another; in some places three and even four trees have been planted to get a suitable one. This lack of uniformity is found in all seedling orchards. Several hundred acres of Vrooman Franquette have been planted in Western Oregon and a few in Southwestern Washington during the last six years. The earlier plantings are beginning to bear large nuts of high quality that command the very highest price paid for walnuts anywhere. I would estimate that a grafted Franquette orchard here in the Northwest, set 40 feet apart and receiving good care, should produce from 20 to 30 pounds per tree at 10 to 12 years old, at an expense of about \$40.00 per acre per year, and this should be doubled at 12 to 16 years at an expense of from \$50.00 to \$60.00. While I consider these figures conservative, I do not want to go on record as making a higher estimate. The principal inducement to raise walnuts is the low cost of care of orchard after it is once established at four or five years old, low cost of harvesting and drying compared with other fruits and low cost of transportation compared with returns.

Maturity for Picking Apples

By J. B. Keil, State Experiment Station,
Wooster, Ohio

THERE is a stage in the development of most varieties of apples, when fruit falls from the tree on account of natural maturity. With the so-called summer and fall apples, this means also that the fruit has reached its full color and maximum degree of quality. But the winter varieties require a longer or shorter time in storage before this full maturity is reached.

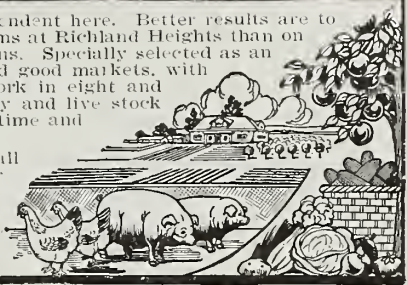
The proper stage of maturity for best results depends somewhat upon the way in which the apples are to be used. It is evident that a mature apple cannot endure handling and shipping as well as one not yet ripe and mellow. For home use, however, the same variety may be allowed to mature before picking, and thereby secure the highest quality possible for the variety. Furthermore, the largest size and best color are also attained by this maturity on the trees. This stage is probably best indicated by the appearance of sound, well-colored apples among the windfalls. The wormy, storm-bruised or otherwise injured apples usually fall prematurely. Examples of this kind appeared in the station orchard this year, after a light fall of hail. Apples having only one mark, in which the skin was broken, ripened and fell off a week or ten days before the main crop was ready to pick. This was especially noticed on Summer Rambo and Wealthy.

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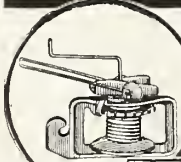
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Another way of determining the stage of maturity is by lifting and turning the apple back toward the twig. If the stem parts readily from the twig, without the use of force, the apple is ready to pick. This is also an advantage of no small importance when rapidity of picking is considered, for by the use of a picking receptacle which leaves both hands free, the apples can be gathered in with greatest ease and rapidity. For packing and shipping, the apples, in the advanced stage of maturity above described, cannot be safely handled. Only with very careful work in picking and packing, and then only in small packages, can mature apples be shipped safely.

When picking for shipping or late storage, color may make the more dependable guide. This, of course, requires a certain acquaintance with the varieties, in order to recognize the proper color, and also a knowledge of the behavior of the variety in storage, so that the maximum color may be developed at maturity. It is probably safe to assume that there should be no decided yellowing of the winter apples before picking for shipment. When the under colors turn from green to yellow shades, it indicates the approaching maturity of the apple, with consequent mellowing and danger of bruising when handled. It is at this stage also that the fungi causing decay most readily develop.

Retaining the stems of apples when picking, while not so important as some have considered it to be, is of sufficient importance that pickers should know how to part the apple from the twig at the proper place. With long-stemmed varieties like Ben Davis, Rome, Grimes, etc., this is a matter only of properly grasping the apple when picking. A finger or thumb placed at the juncture of stem and twig, and a turn of the apple, bending the stem at that point should effect the removal without breaking either the stem or twig. With short-stemmed apples like York, Roxbury, White Pippin or Babbitt, this method is almost impossible. With these varieties a combined pull and sidewise twist accomplishes about the most that can be expected. Even then it is very difficult to prevent snapping the twigs. The advantage of thinning to not more than one apple on a twig should not be overlooked in this connection. The number of "drops" while picking is much greater when the apples hang in clusters.

Both hands are required to pick a cluster of three or more, and this is often difficult or impossible when in the tree or on a ladder. Then when one or two are removed from the cluster the others often fall. As with many other similar operations, the resourcefulness and ingenuity of the picker will determine very largely his efficiency in bringing the apples from the tree to the packing table in proper condition, and it is upon this efficiency more than upon any cut-and-dried methods that we must depend for results.



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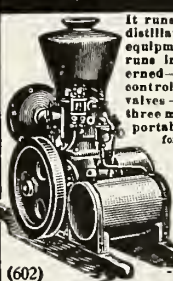
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Continued from page 11

the leaves of the cherry and pear trees, and they feed upon the epidermal tissue, leaving the frame work of the leaves exposed, which soon die and turn brown. One pound of arsenate of lead to fifty gallons of water will kill the slugs but will not hurt the fruit for use.

Codling Moth.—One pound of arsenate of lead to fifty gallons of water will give as good results in fighting codling moth as more lead. The great secret in fighting this pest is in getting the poison into the calyx cup of the embryo apple. If you do not do this your work spells failure. After several years of careful, systematic experimental work, Professor Melander of the Agricultural College at Pullman, Washington, informs us that an average of results shows that in 85 per cent of the wormy apples examined the worms entered at the calyx. This being true, and I believe it is, it is plain to be seen that here is the place to fight. Regardless of theory and from a practical standpoint, it is useless to try to poison these worms by putting the lead upon the outside of the apple, as it has been observed under a strong glass that the worms, in eating in at the side of the apple, spit out the thick, tough skin—do not swallow it. Hence spit out the poison, too. The poison does not get into the worm's digestive canal and it does not die, but keeps right on doing business. If space permitted I would be glad to deal more fully with the actions of the codling moth and other insects which sting and scar the apple, but this is an article on spraying and I will have to confine myself to that subject. Do not think that because you see a sting on the side of an apple where a worm has started to eat it that it is a codling moth larva that has been killed by arsenate of lead put upon the outside of the apple, for it is not. Such stings are the work of some other insect and I question the efficacy of arsenate of lead in combating them.

Arsenate of lead solution as applied to the fruit is not a continuous, cohesive, elastic coating, but instead it lies upon the fruit in detached, minute particles. As the fruit grows the skin expands and these particles are constantly being separated farther and farther apart, so that the insects can bite in between them, and they are wise little rascals, I can assure you, in their choice of things to eat.

It is not a question of how many times it is necessary to spray for codling moth, it is the question of getting the poison into the calyx cups. If you get it there it will stay there until the apple is destroyed, and what is more, it will always be poison. From the time when the petals begin to fall to the time when the calyx closes by the swelling of the apple will vary from six to ten days, according to varieties of apples and climatic conditions. During this interval is the time to spray with lead for codling moth. As most

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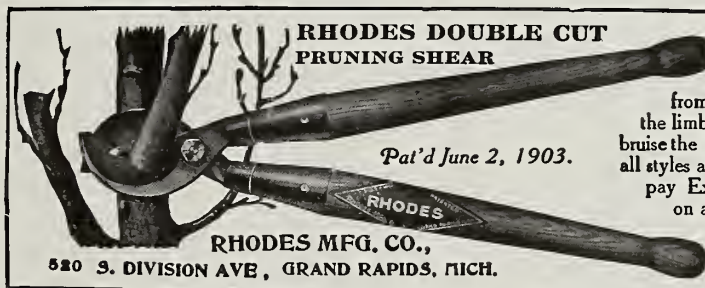
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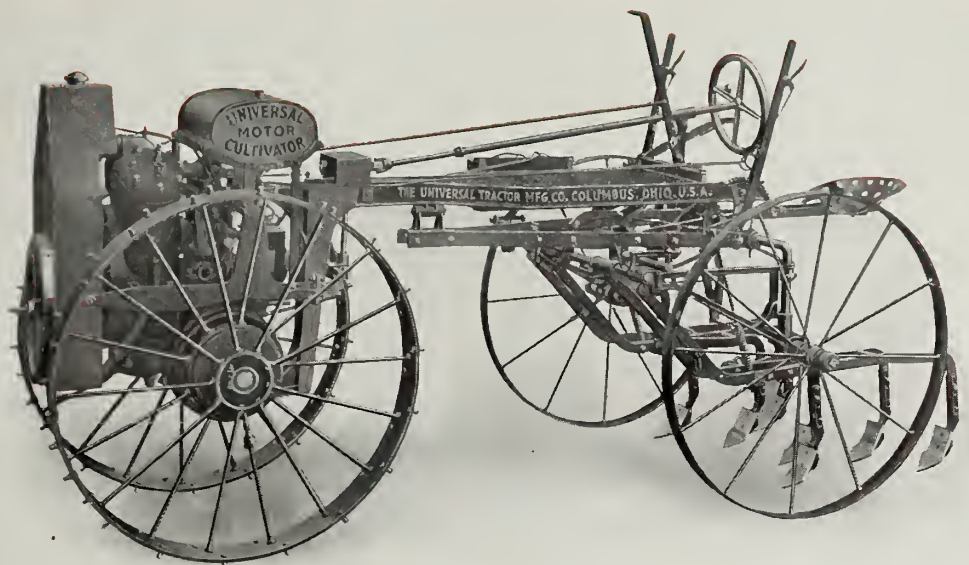
of the blossoms at this time point up and out, it is necessary to spray down or straight into the calyx cup in order to get the poison in there, and it must be sent with force. To shoot the spray at the side of the blossom may wet the stamens, but that is not getting the poison into the lower cup of the calyx. If your trees are large, by all means use a tower on your outfit so that the operator with the spray rod is high enough to shoot down and straight into the blossom. One spraying is enough if you fill every calyx cup on the tree. If you don't, spray again—a dozen times if necessary to accomplish the desired result, but, remember, you will have to do it before the calyx closes. It costs money to do work over, and if this spraying is done thoroughly and right once is enough. Thoroughness is a keynote in spraying. Time spent, material used, money expended do not necessarily mean anything except expense, for it is results alone that count.

Do not try to use an outfit that will give you less than 175 pounds pressure. It would be better still to use 250 pounds. To get the best results, use a Bordeaux nozzle and not too fine a spray. Have body enough to it so that it will drive, and this holds good in all spraying work. There is only one profitable way of doing anything, and that is the right way. Therefore do your spraying in the right way and at the right time, and then you may look for good results. I make no claim for anything new herein—it is the same old story retold for the good of the cause. The apple business looks brighter today than ever before for the man who raises first-class apples. There is always a good market for apples of the best quality, and you can't raise the best quality without thorough spraying, therefore "Let us spray."

Currant and Gooseberry Maggots

Currants and gooseberries become wormy by the maggot of a small fly. The fly pierces through the skin of the young fruit and injects an egg. When the currants are fully ripe the maggots drop out and enter the ground, where they pass the winter. From the nature of the attack it is impossible to cope with this pest by any spray. The only vulnerable period in the life history of the currant maggot is when the insect has entered the ground. A light cultivation of the soil during the late fall will tend to mash some of the worms in the ground and will be a help in protecting next year's crop. However, since these plants have very shallow roots, care must be taken not to injure the root system of the bushes. Chickens do considerable good if allowed to scratch out the maggots at the base of the plants. It might be well to pick the entire crop early before any of the maggots escape. The fruit could be used for jellies and the presence of the worms does not impair the quality of the preserves. As it is, a good many worms in currants are unconsciously used by every housewife.—Washington State Experiment Station Bulletin.

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Herewith Proclaim Their Unshaken Faith in the American Apple

The 1914 crop of apples is being harvested under conditions that have no parallel in the past. There has probably never been a larger crop, our export outlets have been blocked, money is at unheard-of premiums, if obtainable at all, the growers and the trade are all at sea.

Nevertheless STEINHARDT & KELLY are placing contracts for choice blocks of Western box apples from the famous growing districts. They have contracted for approximately

650 CARS

already and are steadily buying more for storage.

Apples will be paying property this year as in the past. Nothing but lack of confidence makes the 1914 situation different from that in other years.

STEINHARDT & KELLY have been handicapped by as much uncertainty as anybody else, but now, after a careful study of conditions and prospects they are carrying out a conservative but confident policy and take this method of publishing their confidence for the encouragement of the apple trade and apple industry.

The crop now being harvested represents eight to ten months of anxious work by the producers of fine apples. Without distribution growers cannot continue to produce. It is now the duty of the trade to back the growers loyally. Old antagonisms must be dropped on all sides, old fallacies about the "superfluous middleman" must also be forgotten and the foundations laid for a bigger and a more glorious future.

Whether we handle box, barrel or bulk apples it is our duty as distributors to back up our fellow Americans who produce this fruit in which we all have vital and permanent interests. Let us talk less of difficulties and more of the possibilities. The Export outlook may be dark now, yet without exports of any sort we could still consume the whole crop at home at a profit to all concerned. Where there is a will there is a way!

STEINHARDT & KELLY cannot buy all the apples in the United States, but they can buy quantities in keeping with their supplies of past years, and are doing so, and they can and are placing contracts judiciously to sustain and compensate those growers in all the famous districts who have worked hardest to establish and maintain the highest standards in quality, goods and pack.

Everybody Must Help

Let us all work together towards a constructive end! The 1914 apple deal may be no different from that of other years; it merely looks a little different now.

Buy apples! Buy good apples! Handle them skilfully, work to stimulate consumption, let them go at prices that will encourage use and give everybody a sure but moderate profit. If you do this the 1914 apple deal will eventually be a paying proposition for everybody concerned, grower, trade and public.